Aug. 3, 1937. L. ARNESON 2,089,084

COLLAPSIBLE CONTAINER AND METHOD OF ERECTING SAME

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Fig. 1

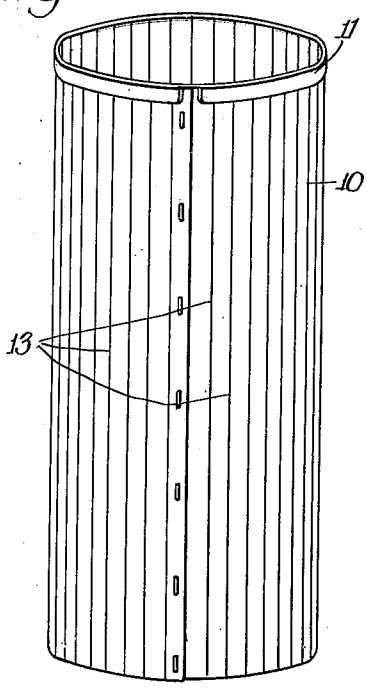


Fig. 2

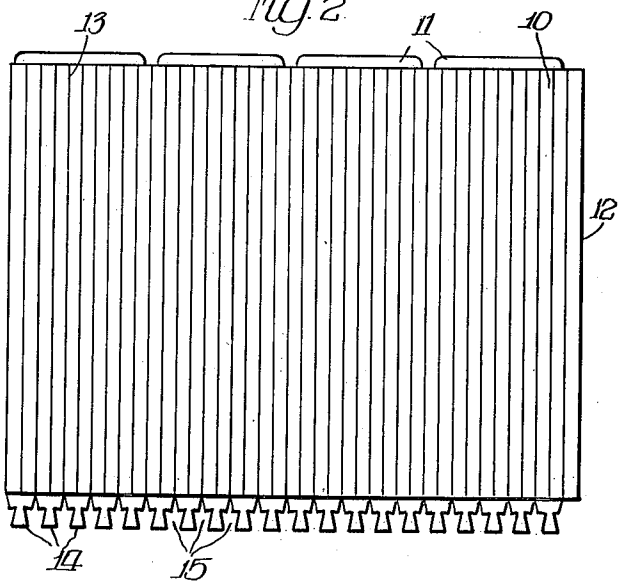


Fig. 3

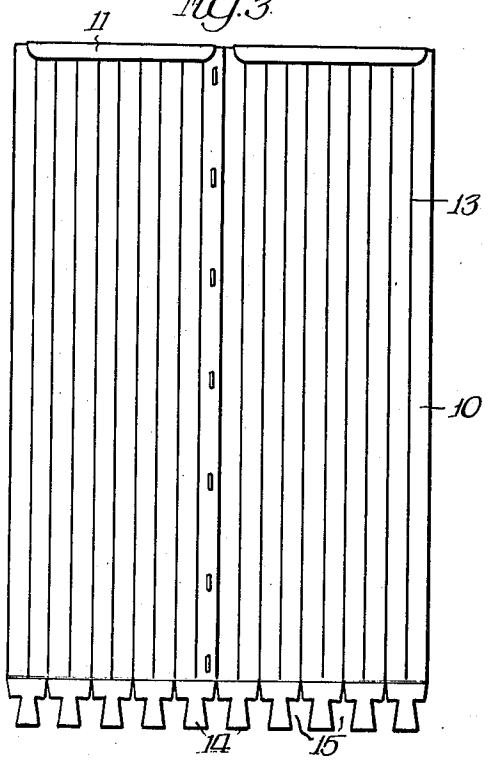


Fig. 4

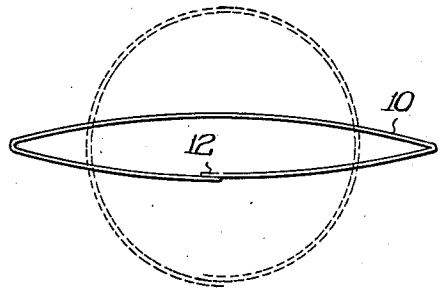
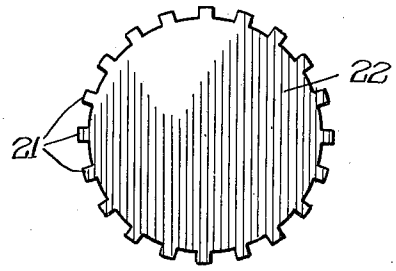


Fig. 5



Inventor:
Lawrence Arneson,
By Cromwell, Greist & Warden
Attys

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Fig. 6.

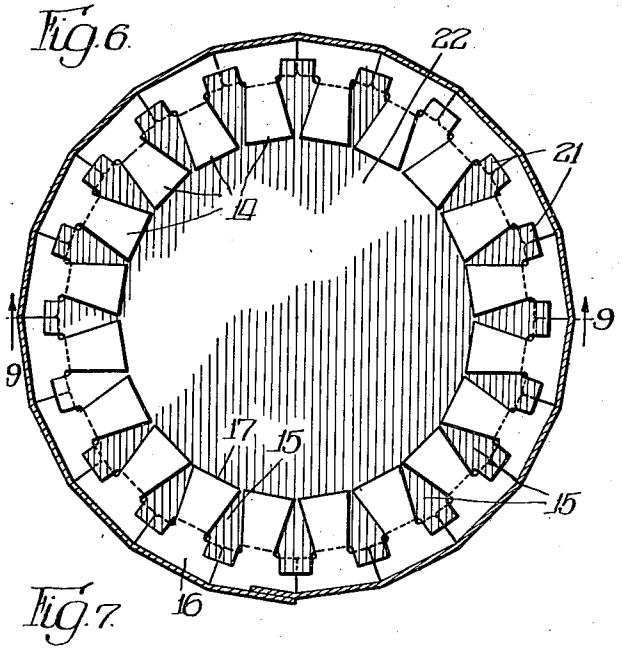


Fig. 10.

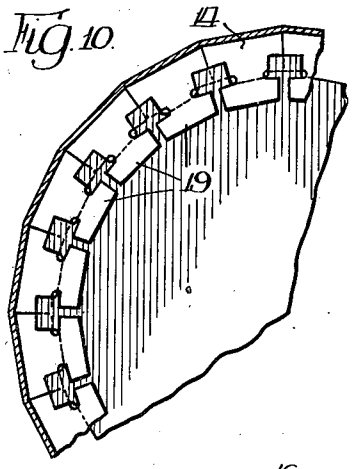


Fig. 11.

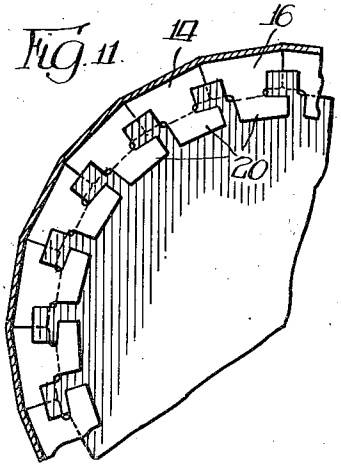


Fig. 7.

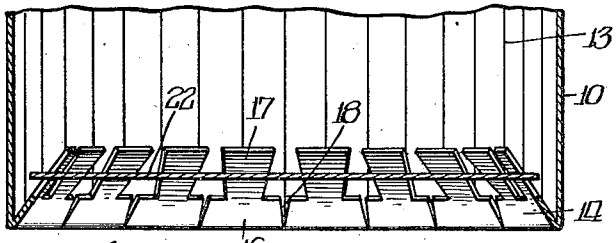


Fig. 8.

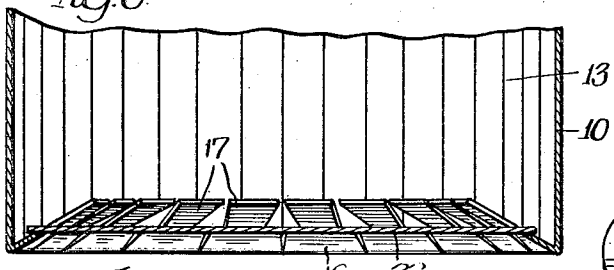


Fig. 12.

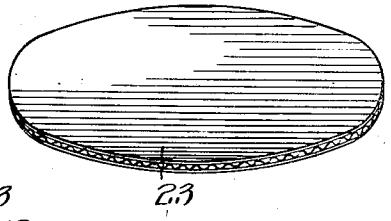
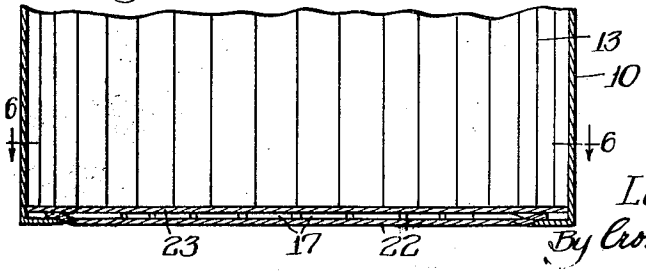


Fig. 9.



Inventor:
Lawrence Arneson,
By Cromwell, Greist & Warden
Attys.

Patented Aug. 3, 1937 2,089,084

UNITED STATES PATENT OFFICE

2,089,084

COLLAPSIBLE CONTAINER AND METHOD OF ERECTING SAME

Lawrence Arneson, Morris, Ill., assignor, by mesne assignments, to President and Directors of the Manhattan Company, a corporation of New York, trustee for Gibson Patent Containers Limited, a corporation of New South Wales, Australia

Application July 17, 1933, Serial No. 680,743

20 Claims. (Cl. 229—5.5)

The present invention pertains to containers, and has particular reference to collapsible fibre containers of the type used for packaging ice cream in bulk and for other similar and related purposes.

A principal object of the invention is to provide a container which may be shipped from the manufacturer to the user in flat or collapsed condition and which may easily be erected, or set up, by the user.

An additional object is to provide a collapsible tubular container having a minimum number of parts and a method of assembling the same.

A further object is the provision of a collapsible container having a bottom section of such structure that it may be composed entirely of fibre board or similar material.

A still further object is to provide a collapsible container having a body portion and bottom section provided with interlocking elements operable to form a secure union without the use of additional holding means.

These and other objects will be apparent from a consideration of the following illustrative and explanative description and by reference to the accompanying drawings, in which—

Fig. 1 is a perspective view of a container constructed in accordance with my invention;

Fig. 2 is a plan view of the blank from which the body portion of the container is constructed;

Fig. 3 is a view of the body portion in assembled and collapsed form;

Fig. 4 is an end view showing how the body portion is extended from the collapsed position shown in Fig. 3 into substantially cylindrical form;

Fig. 5 is a view showing the bottom member which is employed in connection with the body portion of the container;

Fig. 6 is a cross sectional view of the set-up container taken along lines 6—6 of Fig. 9 and showing the manner of interlock between the bottom member and the body portion;

Fig. 7 is a longitudinal sectional view taken through the center of the container which shows the first step in the method of erecting or setting up the container;

Fig. 8 is a view similar to Fig. 7 and discloses a further step in the procedure of assembling and erecting the container;

Fig. 9 is a longitudinal section through the center of the container taken along lines 9—9 of Fig. 6 and shows the bottom section of the container in finally erected form;

Fig. 10 is a fragmentary cross section of a modified form of the container;

Fig. 11 is a fragmentary cross sectional view showing a second modification of the container; and

Fig. 12 is a perspective view of a modified form of the inner bottom disk to be used in connection with the erection of the container.

The use of containers constructed of fibre board or similar flexible material has been found desirable in connection with the packaging, shipping and storing of various commodities, in particular, ice cream and other frozen confections. In fact, such containers have largely replaced the previously used metal cans due to such advantages as economy in manufacture and use and disposal of the empty containers subsequent to use. Fibre containers as constructed by the manufacturer are shipped in flat or knock-down condition to the ice cream factory where they are set up, filled with the materials to be frozen, subjected to a freezing process and stored in a hardening room for the requisite period and subsequently shipped to the dispenser or retailer. After the contents have been dispensed the containers are destroyed so that there is no problem of returning them or of cleaning and sterilizing them for refilling, as is the case where expensive metal cans are employed.

One problem in the construction of fibre containers of this type, which has been particularly vexatious, is the provision of a bottom structure having adequate strength which will be suitable in design and construction to withstand the hard treatment to which such containers are ordinarily subjected. The bottom structures are generally separate from the body portion of the container so that the body portion may be flattened along diametric lines. One type of fibre container which has met with considerable favor consists of a body portion having inwardly extending fingers along its lower edge, an outer cap-like member fitted around the lower edge of the container, and an inner disk, of greater diameter than the diameter of the body portion of the container, which expands the lower edge of the body portion into a metal retaining member. Containers of this type which require a metal band or other extra bottom retaining elements to this extent are more complicated, expensive and cumbersome than need be.

In accordance with my invention I provide a fibre container which may be constructed completely of fibre board or similar material. As shown in the drawings, the container is con-

structed by suitably cutting and scoring a blank to form a body portion 10. This body portion has a plurality of collars 11 along its upper edge which are folded down, as shown in Fig. 1, to add strength to the top of the container. Along one longitudinal edge of the body portion blank is provided an attaching strip 12 which is folded over and secured to the opposite longitudinal edge of the blank to form the body portion. This securement may be made by means of staples 13, as shown in Figs. 1 and 3, by stitching or by other suitable means of attachment. When the attaching strip 12 is secured in the manner described the body portion may be collapsed along diametrically opposite score lines, as shown in Fig. 4. From this collapsed position in which the body portions are stored and shipped the body portion may be distended into cylindrical shape, as will be seen from the dotted lines in Fig. 4.

It has been found desirable in fibre containers of this general type, for use in the packaging of ice cream and similar frozen confections, to provide longitudinal score lines in the body portion, as shown at 13, in order to allow for the expansion of the ice cream upon freezing.

Along the lower edge of the body portion 10 is provided a series of tongues 14 which normally extend in the plane of the body portion, as shown in Fig. 3, when the body portion is in collapsed condition. These tongues are struck from the same blank as the body portion and have adjacent cut-away portions, as indicated at 15, the function of which will be described hereinafter. The tongues 15 have base or shoulder-forming portions 16 (see Fig. 7) extending from the point where the tongues are attached to the lower edge of the body portion. These base portions 16 are integrally connected with and support the projections 17. It will be seen that these supported projections 17 are of less width at their point of jointure to the base or supporting portions 16, than are the latter. It is preferred that the supported projections 17 be of increasing width outward from their point of jointure with the base portion so that when rotated into horizontal position the projections will be contiguous adjacent their free edges, as will be seen from Fig. 6. In order to allow for rotation of the tongues from their normal position in the plane of the body portion to a horizontal position at right angles thereto the base or supporting portions 16 are beveled along their edges 18, as shown in Fig. 7. When in horizontal position, the edges 18 of each tongue are preferably in contact with the proximate edges of the adjajacent tongues. Various modifications in the design of the tongues 14 are possible. For example, the supported projections which are joined to the base portion may assume the shape indicated at 19 in Fig. 10, or at 20 in Fig. 11, the essential requirement in all cases being that the free ends of the tongues be of such shape as to overlie the inner marginal portion of the outer bottom member.

It will be noted that when the tongues 14 are rotated into horizontal position, the contiguous base portions 16 form an inwardly extending annular shelf at the bottom of the body portion. This shelf is utilized as a support for projections 21 of an outer bottom member 22 which is preferably constructed of fibrous material similar to the material used for the body portion. The diameter of the bottom member 22 is substantially equal to the diameter of the inner edge of the shelf formed by the contiguous base members 16 of the tongues 14.

In accordance with my invention, the outer base member is interlaced or interlocked with the tongues 14 and thus tied to the body portion 10, by providing on the tongues and on the base member mutual overriding elements. More particularly, the projections 21 on the base member 22 are made to override the shoulder portions 16, whereby the latter form a support for the bottom member. The projections 17 on the tongues 14 extend inwardly of the outer edge of the bottom member 22 and in superimposed relation thereto. By overriding the bottom member 22, the projections 17 prevent rotation of the tongues 14 about their point of jointure with the lower edge of the bottom portion when the load is placed in the container. It is evident that the structure described provides a mutual interlocking between the body portion and the bottom member and with this method of interlacing the projecting elements of the body portion with the projecting elements of the bottom member, the bottom of the container is flat, free from projections, simple, light and strong.

An inner disk 23, which may be a single fibre board blank, or a corrugated cushion-forming disk, as shown in Fig. 12, is preferably placed over the bottom section and tongues, as shown in Fig. 9, the inner bottom member desirably being of slightly greater diameter than the diameter of the body portion in order to provide for a tight fit and thus to secure the outer bottom member in flat and fully effectively interlocked relation to the body portion. The final assembly of the container is shown in Fig. 9. For many uses it will be found sufficient for maintenance of the bottom in horizontal position to place the commodity in the container, the weight of the commodity acting to position the bottom section properly. The inner bottom member 23, however, has the additional advantage of distributing, to a considerable extent, the weight of the packaged commodity and thus assists in preventing sagging.

The body portion 10 is provided with longitudinal score lines 13 which facilitate the bending of the container into substantially cylindrical shape and accommodate for expansion of the contents during a freezing operation. It is preferred to position the tongues 14 between score lines. The tongues may extend over one or more score lines but each of their outer edges will be positioned adjacent a score line.

As stated heretofore, the body portion is collapsed along diametric score lines and the tongues 14 extend substantially in the plane of the body portion. To erect or set up the container, the collapsed body portion is distended into substantially cylindrical form and the tongues 14 are rotated inwardly about their line of attachment to the lower edge of the body portion. As the tongues rotate they pass through a horizontal position and the rotation is continued until the tongues extend upwardly, as shown in Fig. 7 for example, although the upward rotation may be carried still further. Upward rotation of the tongues has two effects. The tongues extend upwardly adjacent the body portion of the container and therefore are spaced from the center of the container a greater distance than when the tongues are in a horizontal position. Also, upward rotation of the tongues causes the inward projections 17 to be spaced from each other.

When the tongues are rotated into upward position, the bottom member 22 is pressed upwardly from beneath the container until, upon assuming a position above the shoulders 16 of the tongues, the supported fingers 17 will extend upwardly above the bottom member 22, as will be seen in Fig. 7. If the bottom member is not positioned so that the projections 21 thereon will be in proper position with respect to the openings between the tongues 14, the proper position may be obtained by producing relative rotation between the bottom member and the body portion, that is, the bottom member may be rotated until the proper position is assumed, or the body portion may be rotated with respect to the bottom member.

After the bottom member and the tongues are properly positioned, as shown in Fig. 7, the tongues are allowed to rotate downwardly through the position shown in Fig. 8 and into a horizontal position, as will be seen in Fig. 9. This rotation into horizontal position causes the projections 21 on the bottom member to override the shelves formed by the base portions 18 on the tongues 14, and the projecting fingers 17 on the tongues to override the bottom member 22, thereby forming a secure interlock between the body portion and the bottom member. In the assembly, if the tongues are rotated into horizontal position their further rotation upwardly may be effected by pressing the bottom section itself against the tongues. By rotating the tongues into sufficiently vertical position to provide an adequate space in the center of the container the bottom section may be positioned with respect to the tongues by inserting it from above the tongues, but in practice it has proven more satisfactory to move the bottom section upwardly into proper position with respect to the tongues, it being understood that the same result may be obtained by moving or pressing the body section downwardly into proper position with respect to the bottom member.

After the bottom section and tongues are in interlocked relation, the inner bottom member 23 is pressed downwardly against the bottom member and tongues, as shown in Fig. 9, to complete the erection of the container.

After the container is set up, ingredients, such as ice cream in a semi-frozen condition, are placed therewithin and the package then subjected to the usual freezing operation.

It will be understood by one skilled in the art that the structure described hereinbefore may be modified without departing from the essentials of my invention and all such modifications and variations are intended to be designated by the appended claims.

I claim:

1. A container, comprising a fibre body member having a plurality of inwardly extending tongues, and a bottom member of less diameter than the diameter of said body member having outwardly extending projections forming a releasable interlock with the tongues on said body member, said tongues and said projections lying substantially in a horizontal plane.

2. A container, comprising a fibre body member, inwardly extending tongues joined to the base of said body member, said tongues having abutting shoulders and inwardly extending spaced projections, and a bottom member having outwardly extending supporting projections resting on the shoulder portion of said tongues, the inwardly extending projections on said tongues being positioned on said base member.

3. A container, comprising a fibre body member, a base member, tongues along the edge of said body member partially overriding said base member, and projections on said base member partially overriding said tongues.

4. A container, comprising a fibre body member, a base member, tongues along the edge of said body member partially overriding said base member, projections on said base member partially overriding said tongues, and an inner body member fitted over said tongues and said first named bottom member.

5. A container, comprising a fibre blank having its opposite edges secured together to form a substantially cylindrical body member, longitudinally extending score lines in said body member, substantially abutting tongues joined to the lower edge of said body member between certain of said score lines, said tongues having cut-away portions to form openings therebetween, an outer bottom disk underriding the ends of said tongues, peripheral projections on said outer bottom member extending through the openings between said tongues and partially overriding said tongues, and an inner bottom disk fitted into said body member and overriding said tongues and said outer bottom member.

6. A container, comprising a fibre body member, an outer bottom section of smaller diameter than said body member, substantially horizontal interlaced tongues and projections on said body member and said outer bottom member, and an inner bottom member fitted over said tongues and projections.

7. A container, comprising a vertically scored body portion having substantially abutting tongues along its lower edge, said tongues being partially cut away between each other to form an inwardly extending circular shoulder, a base member of substantially the same diameter as the diameter of said shoulder, and projections on said base member extending through the cut-out portions of said tongues and partially overriding the latter, said tongues partially overriding said base member and holding the same in interlocked relation.

8. A container, comprising a body portion having inwardly extending tongues along its lower edge, said tongues having adjacent cut-away sections forming a substantially horizontal circular shoulder, a base member of substantially the same diameter as the inner diameter of said shoulder, and peripheral projections on said base member extending between said tongues and resting on said shoulders, the inner ends of said tongues being wider than said projections and overriding said base member.

9. A container of the type described, comprising a fibre body member, inwardly extending tongues joined to the base of said body member, said tongues having shoulders and inwardly extending projections with enlarged end portions, and a bottom member having outwardly extending supporting projections resting on the shoulder portions of said tongues, the inwardly extending projections on said tongues being positioned on said bottom member.

10. A container of the type described, comprising a body portion having a plurality of inwardly extendable tongues, a bottom member of smaller diameter than the diameter of said body portion and having outwardly extending projections forming a releasable interlock with said

tongues in which said projections partially overlie said tongues and said tongues partially overlie said bottom member, and an inner bottom member fitted over said tongues and said bottom member.

11. A container of the type described, comprising a body portion, a plurality of tongue members hinged adjacent the end of said body portion in adjacent relation with respect to each other, a bottom member insertable within said body portion when the latter is in distended condition, and means on said bottom member for forming an upwardly releasable interlock with said tongue members from the under side of said bottom member, said tongues, means and bottom member being of such size and placement as to permit said interlock to be formed when said bottom member is within said body portion and spaced upwardly from the hinged portions of said tongue members.

12. A container of the type described, comprising a collapsible fibre body member having relatively closely spaced score lines adapted to impart a substantially round shape thereto when in distended condition, a plurality of relatively narrow tongue members extending between scores in said body portion and being hinged to the end of said body portion in adjacent relation, a bottom member insertable within said body member and having openings spaced from said body portion a distance substantially less than the length of said tongue members for forming an interlock with said tongue members from the under side of said bottom member, said tongue members, openings and bottom member being of such size and placement as to permit said interlock to be formed when said bottom member is within said body portion and spaced upwardly from the hinged portion of said tongue members and the latter are in unbent inwardly and upwardly extending position, said tongues extending upwardly through said bottom member from the under side of the latter.

13. The method of erecting a container of the type having a body portion provided with inwardly movable tongues adjacent the end thereof and a bottom member insertable within said body portion and having tongue interlocking openings spaced from the body portion a distance less than the length of the tongues, which comprises positioning said tongues upwardly within the body portion until the portions thereof adapted to interlock with said openings are substantially the same distance from said body portion as said openings, positioning said bottom member within said body portion with said tongues in registry with the openings therein, and moving said bottom member and said tongues outwardly toward the end of the body portion to form an interlock between said tongues and said bottom member.

14. A container of the type described, comprising a tubular body member having a plurality of tongues hinged in proximate relationship at its lower end to bend to inwardly and upwardly sloping positions, and a bottom member insertable within the body member and having portions formed to receive said tongues in intermeshing relationship therewith when the tongues are in inwardly and upwardly sloping positions and the bottom member is within the body member and at a distance above the lower end thereof, each of the tongues extending through the receiving portions in said bottom member from the under side of the latter.

15. A container of the type described, comprising a body portion having a plurality of tongues hinged adjacent its lower end in proximate relationship, and a bottom member insertable within said body portion when the latter is in distended shape, said bottom member having margined openings spaced from said body portion a distance less than the length of said tongues and being operable to receive said tongues to form an interlock when the bottom member is within the body portion a substantial distance above the hinged portions of said tongues, said tongues are in inwardly and upwardly inclined position, and relative longitudinal movement between said body portion and said bottom member is produced, each of said tongues extending through said bottom member from the under side thereof.

16. A container of the type described, comprising a body member, a bottom member insertable within the body member and provided with openings spaced from the body portion, adjacent tongue members each hinged at the end of the body member and extending through the openings in said bottom member from the under side of the latter to form an interlock, said bottom member, openings and tongues being of such size and placement as to permit said interlock to be formed when said bottom member is within said body portion and spaced upwardly from the hinged portions of said tongue members.

17. A knockdown container of the character described comprising, a tubular body member having longitudinally extending score lines permitting collapse of said body into flat position, an end closure for said body member, said end closure having a plurality of spaced openings therein, and tabs extending from the body portion securing the body member and end closure in assembled set-up position, all of said tabs extending around the outside of the material of said end closure extending outwardly beyond the inner portion of said openings and through said openings.

18. A knockdown container of the character described, comprising a collapsible tubular body member, an end closure for said body member, said end closure having a plurality of spaced openings therein, and locking fingers extending from the body member and securing the body member and end closure in assembled set-up position, said locking fingers having a portion the side edges of which substantially abut one another when said fingers are turned inwardly thereby providing a substantially continuous rim portion extending around the material of said end closure extending outwardly beyond the inner portion of said openings, and a neck portion extending through said openings.

19. A knockdown container of the character described comprising, a tubular body member, an end closure for said body member, said end closure having a series of spaced openings therein, locking fingers extending from the body member and securing the body member and end closure in assembled set-up position, said locking fingers having a portion the side edges of which substantially abut one another when said fingers are turned inwardly thereby providing a substantially continuous rim for the container, said fingers having a neck portion extending through the openings, and an end portion seated against the inside portion of said end closure extending inwardly beyond said openings, and an insert disk engaging the end portions of said locking fingers resisting withdrawal of the fingers.

20. A container of the type described, com-

prising a fibre body portion having a series of juxtaposed tongue members hinged at one end thereof, and a bottom member of such size as to be insertable within the body portion and being provided with interlocking openings operable to receive each of said tongue members from the under side of said bottom member when the latter is in upwardly raised position within said body portion and to form an interlock with said tongue members when the bottom member is positioned adjacent the hinged portions of said tongues.

LAWRENCE ARNESON.