

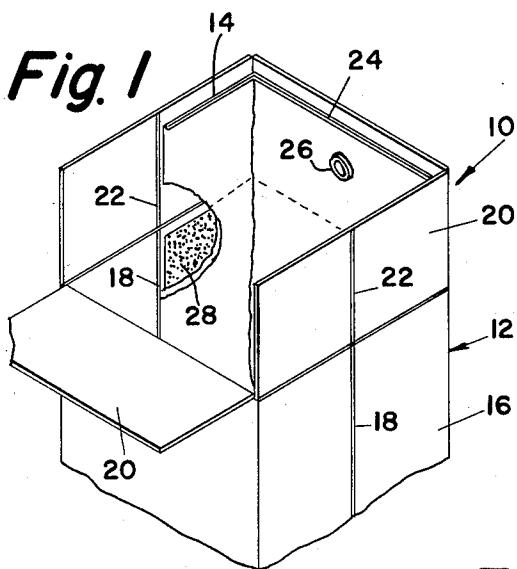
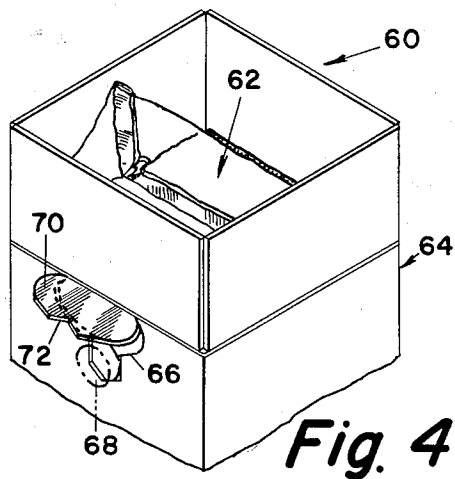
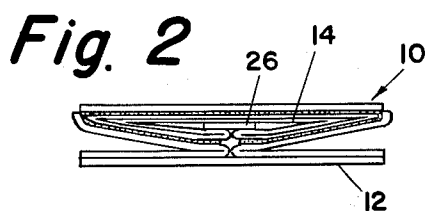
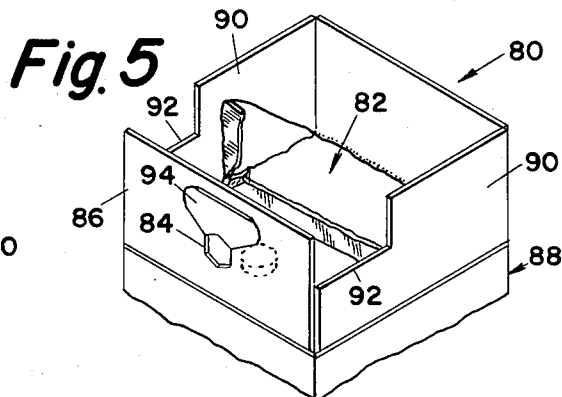
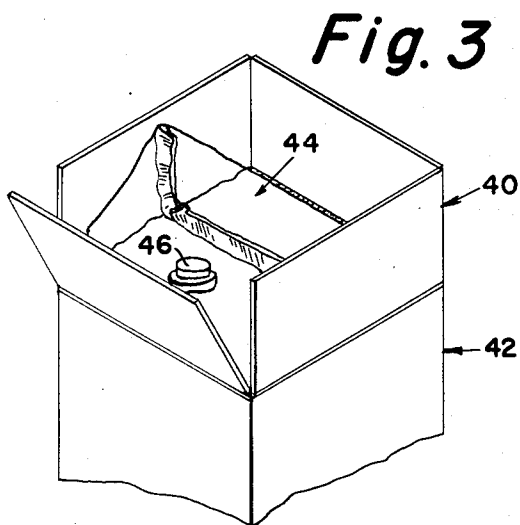
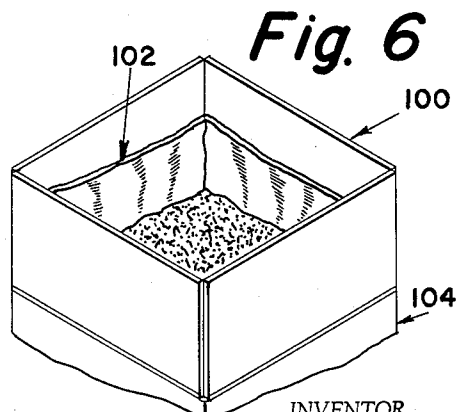
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MULTIPLE SECTION CONTAINER ASSEMBLY

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MULTIPLE SECTION CONTAINER ASSEMBLY
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This application is a continuation-in-part of applicant's co-pending application Serial No. 200,178, filed June 5, 1962, now abandoned.

This invention relates to a container, and it particularly relates to a container having inner and outer units wherein the inner unit is formed of pliable material and the outer unit is formed of relatively rigid material.

Heretofore, container assemblies utilizing pliable inner units and relatively rigid outer units, especially when they were of the collapsible type, generally had the inner unit connected to the outer unit so that when the assembly was either extended into the fully erected position or collapsed into the fully folded position the inner and outer units both extended or collapsed simultaneously. Although this was desirable in some circumstances, it was highly undesirable in other circumstances, as when the inner unit was to remain sealed to the outer air except for a closable filling opening. In such cases, a sudden opening of the inner unit together with the outer unit tends to place such a sudden strain on the inner unit against the partial vacuum therein that it ruptures and thereby becomes useless. Even where the inner unit is provided with an open end, it is often desirable to keep it closed while the outer unit is in erected position until the contents are actually placed into the inner unit. On the other hand, it is often desirable to deflate the inner unit as the contents are dispensed while the outer unit remains open. In either case, it is desirable that inflation or deflation be carried out without the necessity of venting.

In addition to being separately collapsible from its outer container unit, the inner unit should have as few fold lines or seams as possible in its collapsed position because not only does it require a greater internal pressure to straighten out these fold lines but the fold lines themselves form lines of weakness which might rupture under undue strain, as when a bottom support of the rigid outer unit is lacking. It is, further, important that, both in its collapsed and extended positions, the inner unit be adequately adhered to and supported by the outer unit throughout its length, so that the outer unit may act as an anvil or bulwark against the internal pressure of the contents entering the inner unit.

It is, therefore, one object of the present invention to provide a multiple section container assembly wherein the inner unit is separately movable between a collapsed and an extended position independently of the outer unit and without the need for venting even when sealed, but is, nevertheless, attached to and supported by the outer unit.

Another object of the present invention is to provide an assembly of the aforesaid type wherein both the inner and outer units are collapsible and wherein the outer unit provides the maximum protection for the inner unit both in the collapsed and extended positions.

Another object of the present invention is to provide an assembly of the aforesaid type wherein the inner unit is a pliable container having a minimum number of fold

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lines and a maximum area of adhesion to the outer container both in collapsed and extended positions.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following description when read in conjunction with the accompanying drawings wherein:

FIG. 1 is a fragmentary, top perspective view, with parts broken away, of one embodiment of the invention, the device being shown with the outer container unit in extended position and the inner unit collapsed.

FIG. 2 is a top plan view showing the assembly of FIG. 1 in fully collapsed position.

FIG. 3 is a view similar to that of FIG. 1 but showing the inner unit filled and in extended position, and showing an outer unit which is free of any intermediate longitudinal fold lines.

FIG. 4 is a fragmentary perspective view of a modified form of the invention, both the inner and outer units being shown in extended position.

FIG. 5 is a view similar to FIG. 4 but showing a third embodiment of the invention.

FIG. 6 is a view similar to FIG. 4 but showing a fourth embodiment of the invention.

Referring now in greater detail to the various figures of the drawing, there is shown in FIGS. 1 and 2 a container assembly, generally designated 10, comprising an outer unit 12 and an inner unit 14. The outer unit 12 is constructed of relatively rigid material such as corrugated shipping case material, cardboard, fiberboard, molded paper pulp, etc. and comprises four walls 16 of which two opposed ones are preferably provided with longitudinal fold lines 18. A foldable flap 20 is hingedly connected to each of the walls 16. Those flaps 20 which are attached to those walls 16 which contain a fold line 18 are also provided with fold lines 22 forming continuations of the fold lines 18 in the corresponding walls.

The inner unit 14 comprises a pliable bag or liner constructed of any desired pliable material such as polyesters, polyamides, organic derivatives of cellulose, metallic foil, paper, etc. Preferably, it is constructed of a heat sealable polymer such as polyethylene, polypropylene, etc.

The unit 14, as illustrated in the embodiment shown in FIGS. 1 and 2, is formed either from tubing or from two superimposed sheets sealed at their longitudinal edges. In either case, the ends are sealed, as at 24, and a filling opening is provided at 26. As clearly shown in FIG. 1, the liner 14, when in collapsed position, is in the form of a flat, double-ply sheet, with the plies being connected at the longitudinal and upper and lower edges. The filling opening 26 is formed on the inner ply, that is, the ply which faces toward the interior of the outer container (as seen in FIG. 1), and the entire so-called flat double-ply sheet is superimposed over one-half of the inner circumference of the outer container. The upper and lower portions of the liner 14 are superimposed over the greater extent of the corresponding flap areas. However, where-as the so-called outer ply of the liner is adhered to the corresponding wall area of the outer container, as by the adhesive shown at 28 in FIG. 1, the portions of the liner which extend over the flap areas are not adhered to the flaps but are free to move relative thereto. It should be noted that although the adhesive 28 is illustrated as

applied over the entire adhered area, the adhesive may optionally be applied in spots or strips.

The assembly illustrated in FIG. 1 is adapted to be folded into collapsed, storage condition, such as shown in FIG. 2, by folding the outer container 12 around the two fold lines 18 which are bent inwardly. In this position (FIG. 2) not only is the assembly in compact form for storage but the adherence of the liner 14 to the container 12 is maintained at the same time that the forward portion of the outer container (the bottom portion in FIG. 2) acts as a multi-ply protection for the more fragile liner 14. It is, further, to be noted that by arranging the liner 14 so that the central portion is superimposed over one wall 16 of the outer container 12 while its side portions or side wings are superimposed over one-half of the corresponding perpendicular walls of the outer container (as clearly shown in FIG. 1), the liner is extendable from its flat collapsed position to a fully extended position substantially equal to the inner area of the outer container with the provision of only two longitudinal fold lines (or lines of weakness). Furthermore, the adherence of the side wings to the corresponding outer container walls permits the outer container to act as a bulwark or support for the liner as the internal pressure of the filling material builds up and expands the liner. On the other hand, without such perpendicular side wings, it would be necessary to provide an accordion structure for the liner wherein at least three fold lines (or lines of weakness) would be necessary to permit the liner to move from the flat position to the fully open position corresponding to the outer area. Furthermore, the central pleats between the central fold line and the outer fold lines of the accordion structure would be completely unsupported during the expansion of the liner while being filled and there would be a far greater tendency to rupture.

The position of the inner container 14 when fully expanded would be identical to that of the liner shown in FIG. 3 (to be hereinafter more fully described), the filling opening then being uppermost since the upper portions of the liner would bend over to form the top surface of the filled inner container.

The embodiment of the device shown in FIG. 3, and generally designated 40, is identical to the assembly 10 of FIGS. 1 and 2 except that the outer container 42 does not have any longitudinal fold lines such as shown at 18 in FIG. 1. This does not permit the outer container to be as completely protective for the inner liner as in FIG. 1 since the assembly here can only be collapsed around the fold lines between the four walls. However, the assembly itself, when in extended position, is somewhat more sturdy because of the absence of the additional fold lines.

It should be noted that the filling opening of the liner 44 in FIG. 3 is shown provided with a closure cap 46 which is also utilizable in the embodiment of FIG. 1.

In FIG. 4 there is illustrated an embodiment of the invention which is almost identical with that of FIG. 3 (the use of longitudinal fold lines such as at 18 being optional although not shown in the drawing) except that this type of assembly, generally designated 60, is utilizable for dispensing the contents of the inner container or liner 62 through one wall of the outer container 64. This is accomplished by means of a key-type slot 66 in one wall of the outer container. The narrow vertical portion of the slot 66 is polygonal in shape and just not quite wide enough to permit entrance therethrough of the closure member 68 of the filling opening which is positioned lower down in the liner 62 than is the filling opening in either of FIGS. 1 and 3. A hinged flap 70 closes the elongated horizontal portion of the slot 66. The flap 70 is provided with a V-shaped notch 72 which not only serves as a finger grip but also serves to complete the polygonal shape of the narrow slot portion when the flap is closed. When the contents are to be dispensed,

the flap 70 is pulled open (as in FIG. 4), the closure member 68 is pulled through the slot, bringing the filling neck with it, and the closure is removed. If desired, the flap 70 may be defined by a perforated line completely around its periphery so that it may be entirely removed.

In FIG. 5, the assembly, generally designated 80, is almost identical with that of FIG. 4 (longitudinal fold lines again being optional although not shown), except that the filling opening is higher in the inner container or liner 82 than in the liner 62, being in the same position as in FIGS. 1 and 3, so that when the inner container is in filled extended position, the filling opening is in the top surface (as in FIG. 3). For this purpose, the key-shaped slot 84 (identical to slot 66) is placed in one flap 86 of the outer container 88 while the two perpendicular flaps 90 are provided with cut-out portions 92 so that when the flaps are overfolded an opening is provided through which the filling neck and closure can extend. The slot 84 is provided with a hinged flap 94 identical to flap 70 and used for the same purpose.

The embodiment shown in FIG. 6 comprises an assembly, generally designated 100, which is similar to that of FIG. 3 (longitudinal fold lines being optional), except that the inner container or liner 102 is provided with an open upper end. Otherwise both the inner container or liner 102 and outer container 104 are identical to their counterparts in both FIGS. 1 and 3. This form of the invention does not have the important property of being sealed against contamination and adapted for vacuum filling as do the forms of the device in FIGS. 1-5, but it does possess the other important properties of the other embodiments and is also adapted for easy filling and removal of the contents, especially powders and the like.

Obviously many modifications and variations of the present invention are possible in the light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

The invention claimed is:

1. A multiple section container assembly comprising an outer collapsible container of relatively rigid material and an inner collapsible container of relatively pliable material, said outer container having an erected position and a collapsed position, said outer container being defined in its erected position by four walls, each wall being perpendicular to the walls on either side thereof, said inner container, when in collapsed position, comprising a pair of pliable, face-to-face superimposed walls connected to each other at each of their two opposite edges by a single linear fold, each single linear fold forming a linear hinge line, one of said walls of the inner container comprising an inner wall and the other an outer wall, said inner wall being superimposed in continuous face-to-face relation over the inner surface of one wall of said outer container and over substantially one-half of the inner surfaces of the walls of the outer container on each side of said one wall, said inner wall of the inner container being adhered to those inner surfaces of the outer container over which it is superimposed, and the outer wall of said inner container being movable relative to said inner wall, around said linear hinge lines, from the collapsed to an erected position, said outer container being movable from its collapsed position to its erected position while said inner container remains in its collapsed position.
2. The assembly of claim 1 wherein said inner container is sealed at opposite ends and is provided with a filling and dispensing opening, and a removable closure means for said filling and dispensing opening.
3. The assembly of claim 1 wherein the said perpendicular walls on each side of said one wall are each provided with a longitudinal fold line adjacent to but free from any overlap by said inner container when said inner container is in collapsed position, said longitudinal fold lines forming hinge means for collapsing said outer container.

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4. The assembly of claim 1 wherein each of the walls of said outer container is provided with a hinged flap at least at one common end, said flaps being hingedly movable into and out of a position wherein they combine to form an end closure.

5. The assembly of claim 1 wherein one end of said inner container is open.

6. The assembly of claim 1 wherein a slot having a movable closure is provided in said outer container to removably receive the neck of a filling and dispensing means on said inner container.

7. The assembly of claim 1 wherein each of the walls of said outer container is provided with a hinged flap at least at one common end, said flaps being hingedly movable into and out of a position wherein they combine to form an end closure, and a slot having a movable closure in at least one of said flaps to removably receive the neck of a filling and dispensing means on said inner container.

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