Oct. 31, 1967 L. KESSLER 3,349,991

FLEXIBLE CONTAINER

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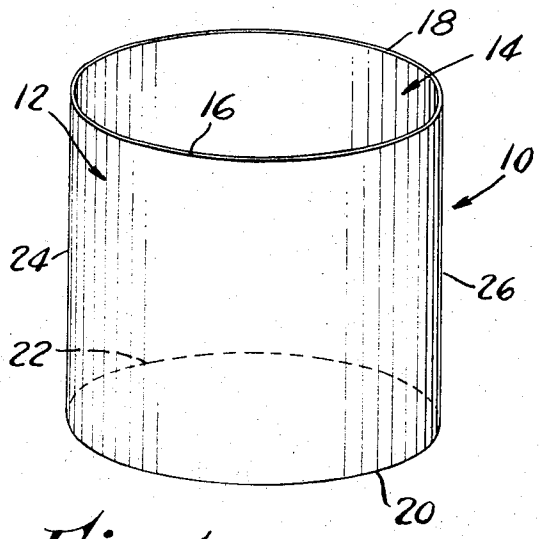


Fig. 1

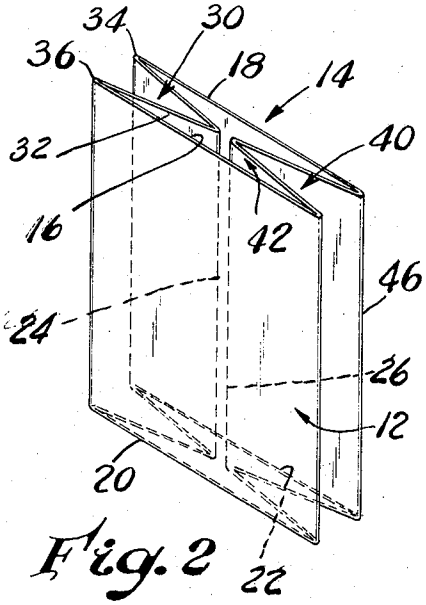


Fig. 2

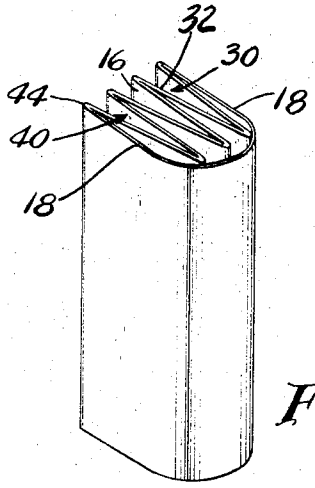


Fig. 3

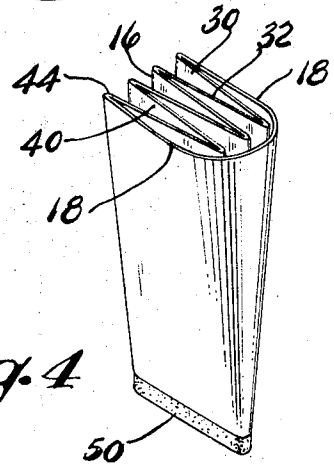


Fig. 4

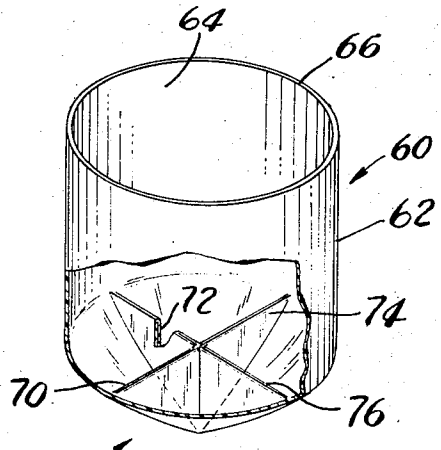


Fig. 5

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FLEXIBLE CONTAINER

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The present invention relates to a new and novel container and method of making same, and more particularly to a container formed of heat-sealable plastic material such as polyethylene or the like.

While the container of the present invention may be made of various materials, it is particularly directed to the concept of employing heat-sealable plastic material, the completed container being adapted for use with either wet or dry substances since the material of the container is fluid-tight and the closure at the bottom of the container is completely sealed. The container of the present invention may either be used alone or as a liner for a more rigid outer container such as a garbage pail and the like.

The erected container provides a plurality of integral ribs or partitions formed on the inner lower portion thereof, these ribs or partitions serving as a reinforcing means for the bottom of the container. In addition, these ribs serve to spread the weight of the enclosed substance over the seam portions of the container and more uniformly distributes the stress and strain over the container structure. In addition, it is evident that these ribs will tend to prevent excessive shifting of the substance disposed within the container.

A novel method is also provided for making the container of the present invention in a very simple and expeditious manner.

An object of the present invention is to provide a new and novel container which is substantially fluid-tight so as to be employed with either wet or dry substances and which may be used either alone or as a liner for another container.

Another object of the invention is the provision of a container including integral means to spread the weight of the contents over the seam portions of the closed end of the container and to more uniformly distribute the stress and strain of the contents over the entire structure while at the same time minimizing any shifting of the contents.

Still another object of the invention is to provide a container including reinforcing means at the lower closed end thereof.

A further object of the invention is the provision of a container which may be normally stored in a substantially flat condition and then readily erected into operative position.

Still another object of the invention is to provide a novel method of making a container.

Yet a further object of the invention is the provision of a container which is quite simple and inexpensive in constructon, and which at the same time is extremely efficient and reliable in use.

Other objects and many attendant advantages of the invention will become more apparent when considered in connection with the specification and accompanying drawings, wherein:

FIG. 1 is a top perspective view of a first step in the method of the present invention;

FIG. 2 is a top perspective view of a further step in the method of the present invention;

FIG. 3 is a top perspective view of still a further step in the method of the present invention;

FIG. 4 is a top perspective view of a still further step in the making of a container according to the present invention; and

FIG. 5 is a top perspective view partly broken away and partly in section, illustrating the erected container ready for use.

Referring now to FIG. 1 of the drawings, the first step in the method of the present invention is illustrated. A tubular means indicated generally by reference numeral **10** is formed in a conventional manner as by forming a continuous tube with an extrusion machine and cutting off of a desired length of the tube. The tubular means **10** may also be made from sheet polyethylene which is formed into a tube. Any suitable heat-sealable plastic substance may be employed, and the plastic substance is illustrated as being transparent for the purpose of illustration, although this is of course not necessary in actual practice.

The tubular means is open at the opposite ends thereof and has been flattened as seen in FIG. 1 to form two plies indicated generally by reference numerals **12** and **14**, these plies having upper end edges **16** and **18** respectively and lower end edges **20** and **22** respectively, the two plies being interconnected at the opposite side edges **24** and **26** thereof.

Referring now to FIG. 2 of the drawing in which the next steps of the method of making the container according to the present invention are illustrated. The side edge **24** is moved inwardly as seen in FIG. 2 to form a folded gusset comprising re-entrant folded layers **30** and **32**, the side edge **24** becoming the medial fold of the gusset. It is apparent that this folded gusset defined by layers or plies **30** and **32** serve to interconnect the newly defined adjacent side edges **34** and **36** of plies **18** and **16** respectively.

In a similar manner, the side edge **26** as seen in FIG. 1 is moved inwardly as seen in FIG. 2 to define a folded gusset comprising re-entrant folded layers **40** and **42**, the former side edge **26** now defining the medial fold of the gusset. This gusset defined by layers or plies **40** and **42** serves to interconnect the newly formed adjacent side edges **44** and **46** of plies **18** and **16** respectively.

It will also be noted as seen in FIG. 2 that the medial folds **24** and **26** of the gussets are disposed adjacent one another. The gussets as seen in FIG. 2 are in opposed substantially parallel relationship with each of the gussets extending inwardly toward the center of the material of each of the plies **16** and **18**.

Referring now to FIG. 3 of the drawings, the two plies **16** and **18** are folded medially with the two halves of the ply **16** being brought into parallel substantially contacting relationship with one another to define first and second inner plies **16**, **16**. The two halves of the other ply **18** may now be considered first and second outer plies **18**, **18**. It will be understood that the first and second outer plies as well as the first and second inner plies are connected with one another along the side edges thereof by the medial folds formed in the plies **16** and **18** when folding the assembly into the position shown in FIG. 3.

In the folded position seen in FIG. 3, it is apparent that the side edges opposite to those connected by the medial folds of the first outer ply are connected with those of the first inner ply by one of the folded gussets, while those of the second outer ply and the second inner ply are interconnected with one another by the other of the folded gussets. It will also be noted that in this position, the medial folds of the gussets as well as the lines of connection between the first and second outer plies and the first and second inner plies are all disposed adjacent one another.

Referring now to FIG. 4 of the drawings, the next step in the method of making the container according to the present invention is the sealing of the lower portion of the container. This is accomplished by heat sealing all of the various plies plus the folds of the gussets along the lower end edges thereof as indicated at **50** in FIG. 4. In this manner, the lower end of the container is completely sealed so that the container is adapted to hold liquids if

so desired. It will of course be understood that the heat sealed area **50** extends completely across the entire width of each of the plies and the folds of the gussets as seen in FIG. 4.

Referring now to FIG. 5 or the drawings, the erected container is illustrated. In order to arrive at the construction shown in FIG. 5, it is necessary to open up the end portion of the container opposite to that of the sealed end or lower end thereof. As seen in FIG. 5, the erected container is indicated generally by reference numeral **60** and includes an outer surface **62** and an inner surface **64**, the container being open at the upper end **66** thereof.

The lower closed end of the container is indicated generally by reference numeral **68** and includes four integral ribs or partitions indicated generally by reference numerals **70**, **72**, **74** and **76**, each rib being disposed at approximately an angle of 90 degrees with respect to the adjacent ribs, and all of the ribs being joined together along the heat sealed portion **50** which in the erected container extends upwardly in the central bottom portion of the container.

It is apparent from the foregoing that there is provided according to the present invention a new and novel container which may be employed with either wet or dry substances and may be utilized either alone or as a liner for another container. The erected container includes a plurality of ribs which are spaced from one another so as to spread the weight of the contents over the seam portions at the bottom of the container and to more uniformly distribute the stress and strain over the structure of the container while limiting shifting movement of the contents. These ribs also serve as reinforcing means at the bottom closure of the container. It will also be noted that the container may be stored in a substantially flat condition as seen in FIG. 4 of the drawings and then readily erected into the operative position as seen in FIG. 5. A novel method is provided for making the container of the present invention in a most simple and expeditious manner, and the container structure itself is quite simple and inexpensive and yet is quite efficient and reliable in use.

As this invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, the present embodiment is therefore illustrative and not restrictive, and since the scope of the invention is defined by the appended claims, all changes that fall within the metes and bounds of the claims or that form their functional as well as conjointly cooperative equivalents are therefore intended to be embraced by those claims.

I claim:

1. A container of flexible material open at one end and comprising a first outer ply and a second outer ply, said plies being connected at the side edges thereof, a first inner ply and a second inner ply, said first and second inner plies being connected at the side edges thereof, the opposite side edges of said first outer ply and said first inner ply being connected to one another by a folded vertical gusset disposed therebetween, the opposite side edges of said second outer ply and said second inner ply being connected by another vertical folded gusset disposed therebetween, all of said plies being connected together at one end edge thereof to form a plurality of individual pockets, closed at the bottom and open at the top.

2. A container of flexible material open at one end and comprising first and second outer plies connected to one another at one side edge thereof, a first inner ply and a second inner ply connected at the side edges thereof, the opposite side edges of said first outer ply and said first inner ply being interconnected by re-entrant folded layers disposed therebetween and extending throughout said opposite side edges, the opposite side edges of said second outer ply and said second inner ply being interconnected with one another by re-entrant folded layers disposed therebetween and connected with said last-mentioned side edges throughout the length thereof, all of said plies being sealed to one another at the lower end edge thereof to close off one end of the container opposite to the open end thereof to form a plurality of individual pockets of uniform size and capacity.

3. A container as defined in claim **2** wherein each of said re-entrant folded layers defines a medial fold, said medial folds being disposed adjacent one another.

4. A container of heat-sealable plastic material open at one end and comprising first and second outer plies of material connected at one side edge thereof to one another, first and second inner plies connected to one another at one side edge thereof, the lines of connection between said first and second outer plies and said first and second inner plies being disposed adjacent one another, the opposite side edges of said first outer ply and said first inner ply being interconnected throughout the length thereof by a folded gusset, said gusset being disposed between said first outer ply and said first inner ply and defining a medial fold, the opposite side edges of said second outer ply and said second inner ply being interconnected throughout the length thereof by a further folded gusset, said further folded gusset being disposed between said second outer ply and said second inner ply and defining a medial fold, the medial folds of said gussets being disposed adjacent said lines of connection between said first outer ply and said second outer ply and said first inner ply and said second inner ply, all of said plies and said gussets being heat-sealed to one another at the lower end edge thereof to form a plurality of individual pockets of uniform size at the lower end of the container opposite to the open end of the container.

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