

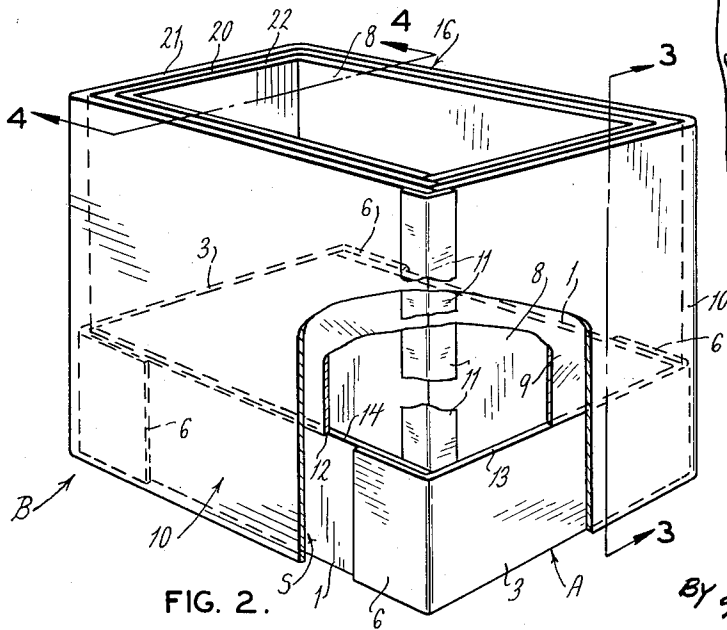
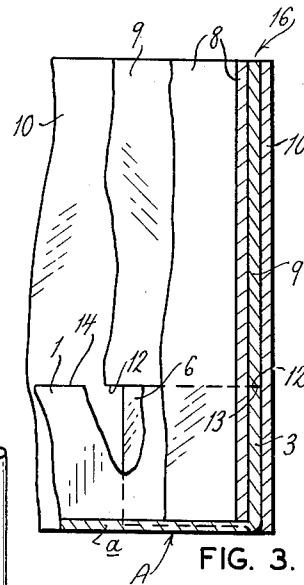
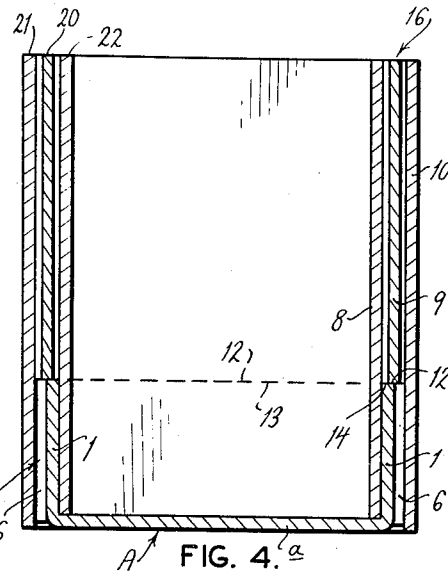
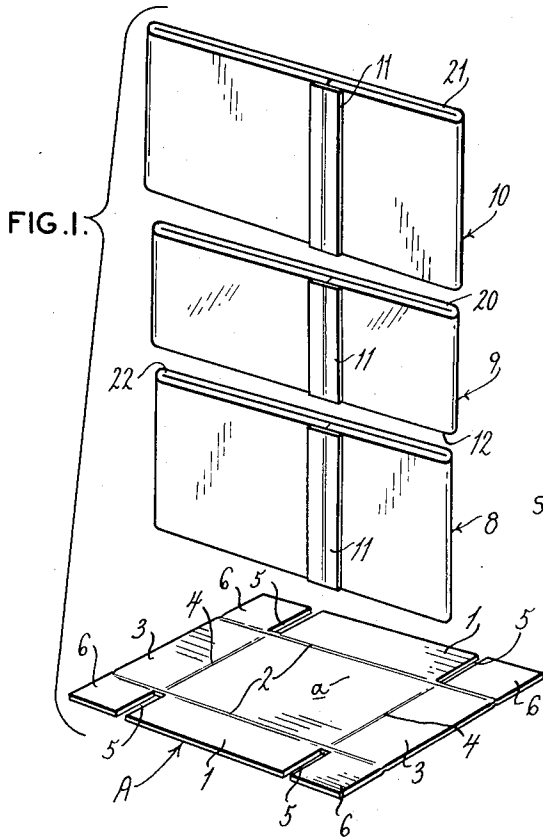
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W. C. GEORGE ET AL  
CONTAINERS

2,729,384

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2 Sheets-Sheet 1



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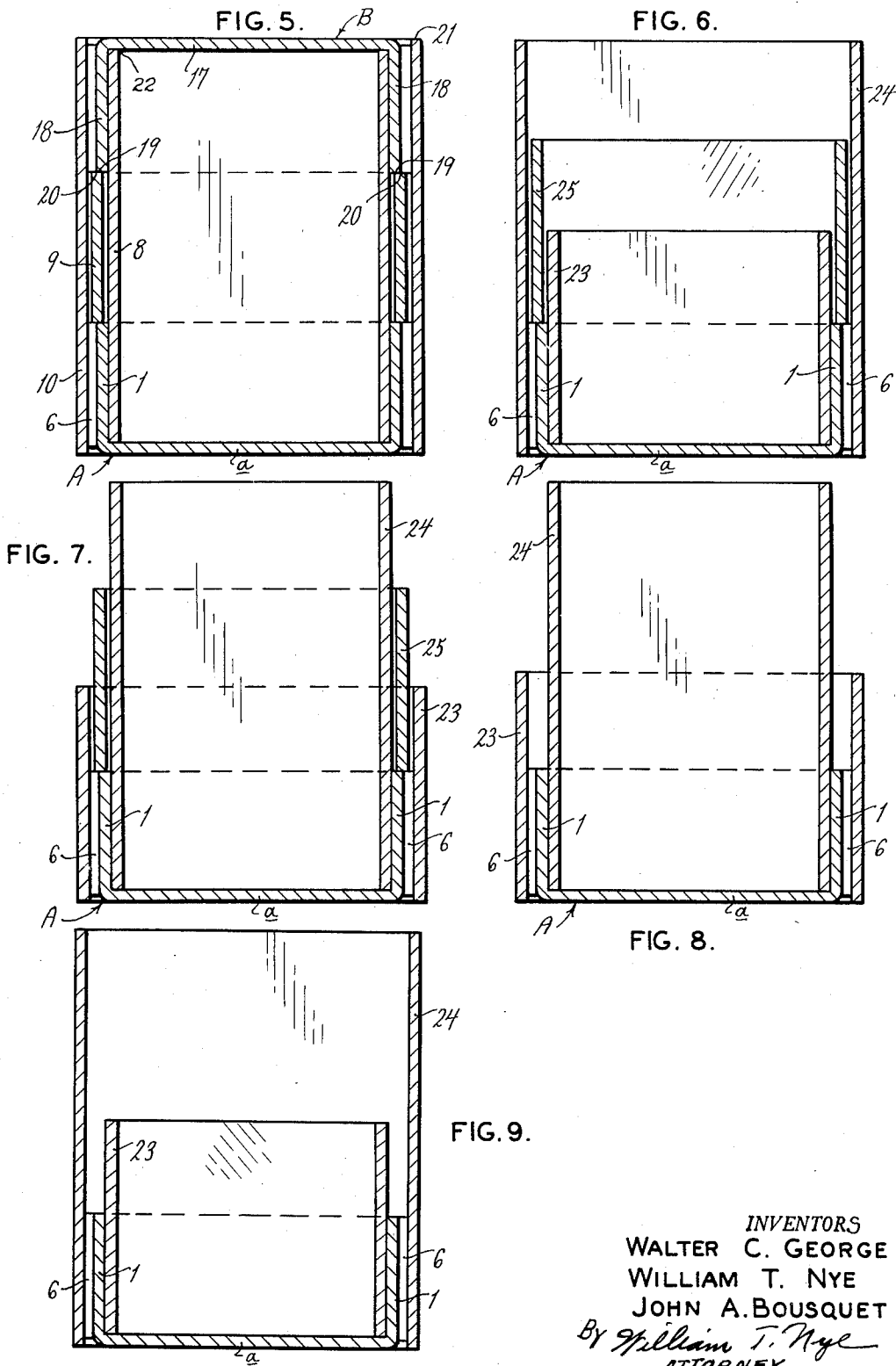
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1

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## CONTAINERS

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3 Claims. (Cl. 229—23)

This invention relates to rectangularly shaped, relatively large, new and useful, collapsible containers comprising a relatively shallow bottom tray and walls formed of a plurality of open-ended sleeves telescoped about the walls of the tray with their lower end edges in substantially co-planar relation with the inner and/or outer face of the bottom panel of the tray.

These improved containers are preferably constructed of corrugated paperboard or other suitable material and are particularly adaptable to packing, shipping and storing materials and commodities therein which have inherent cold flowing characteristics after being placed in the container. Synthetic rubber, for instance, when packed in containers, has a tendency to cold flow, i. e., to spread out laterally, thereby exerting great pressure on the walls of the container, particularly the lower portion thereof where outward pressure of the synthetic rubber and the like is greatest.

Containers fabricated in accordance with the present invention, while requiring only a minimum of material, provide the necessary reinforcement to the walls to prevent disruption or objectionable distortion thereof by the expansive forces or outward thrusts exerted by the synthetic rubber or other materials of similar cold flowing characteristics.

Synthetic rubber, for which the container is primarily designed, is usually formed into blocks approximately 28 inches long, 14 inches wide and about 7 inches thick, weighing from 65 to 85 pounds each. In a preferred form of the invention, suitable for carrying approximately 1000 pounds of the blocks or other material, the container is designed to pack the blocks in layers, three blocks in each layer, two blocks side by side and the third block extending lengthwise across the ends of the others. The container is thus relatively large in horizontal cross-section, typical dimensions being about 28 to 30 inches in width, 42 to 44 inches in length and the height sufficient to load at least three or preferably four or more layers of blocks packed as described. These dimensions of the container are merely illustrative of a particularly useful size for the described purpose and they may be varied as desired without departing from the scope of the invention as set forth in the appended claims. Since contamination by metal must be avoided in the subsequent processing of synthetic rubber, the use of staples or other metallic securing means in assembling containers is undesirable for packaging this material and should be eliminated from containers intended for this purpose.

The present container comprises a rectangularly-shaped bottom tray section having a bottom panel and upstanding walls and a plurality of open-ended wall-forming sleeves of greater length than the tray walls in slidably and snugly telescoped relation with the inner and outer faces of the tray walls. The bottom edge of at least one of the sleeves is in substantially co-planar relation with the inner face of the bottom panel of the tray section and the bottom edge of at least one other sleeve in co-planar relation with the outer face of the bottom panel. It has been found that three sleeves made of double faced cor-

2

rugated board, forming walls of three-ply thickness, provide ample strength for the purpose described under all ordinary conditions. In instances where greater strength is desirable, additional telescoping sleeves may be employed or one or more of the wall-forming sleeves may be made of double-wall corrugated board.

In a preferred form of the invention, the tray and three sleeves are provided. An end portion of one of the sleeves is designed to snugly and slidably fit the interior faces of the upstanding walls of the tray section, an end portion of a second sleeve to snugly and slidably fit the exterior faces of the upstanding walls of the tray, the upper ends of both sleeves terminating at the same level, the height of the sleeves being determined by the number of layers of the synthetic rubber blocks it is desired to pack in the container. A third sleeve is snugly and slidably interposed between the inner and outer sleeves with its lower end edge seating on the free upper edge of the tray walls and its upper end edge terminating in co-planar relation to the first mentioned sleeves, as shown in Figs. 2, 3 and 4.

The tray of the container may be formed of a bottom panel having upstanding side and end walls with end wall flaps folded on either the outer or inner face of the adjacent side wall for the purpose of securing the walls in substantially right angular relation with the bottom panel. The end wall flaps are held in position by either the outer or inner telescoping sleeve, depending on which face of the adjacent side walls the flaps are positioned.

Another form of the tray which may be employed comprises a bottom panel with upstanding walls, each wall of a pair of opposed walls having a flap extending from each end folded into flatwise relation to the inner face of the adjacent wall as hereinbefore described. In addition, each of the adjacent walls has an upper marginal extension folded inwardly and downwardly over the before-mentioned folded flaps in parallel relation thereto, thus effectually securing the walls of the tray in proper substantially right angular relation to the bottom panel.

The hereinbefore described form of the invention is well adapted for packaging, storing and truck shipment of synthetic rubber, commodities of similar characteristics and other materials, wherein it is not necessary or not intended to stack the loaded containers one upon the other. However, where such materials, particularly synthetic rubber, when packed in the present containers, are to be shipped in railroad cars, it is sometimes desirable to stack the loaded containers in at least two layers to attain the prescribed minimum carload weight for economical shipment. In such cases, a cover is provided for the containers to support and distribute the weight of a superimposed loaded container. The cover may be in the form of a tray similar to the hereinbefore described bottom tray. The cover tray is slidably and snugly placed in inverted position over an upper end portion of the inner sleeve and the walls of the tray are interposed between the top parallel portions of the inner and outer sleeves. The intermediate sleeve is reduced in height, so that its upper end edges will abut the free end edges of the cover tray walls in the closed position of the container. See Fig. 5.

In a modified form of the invention, the open-ended sleeves may vary in length, all of them, however, being of greater length than the walls of the tray. For example, the shortest sleeve may be snugly and slidably telescoped on the inner faces of the bottom tray walls, while the longest sleeve may be snugly and slidably telescoped over the outer faces of the tray walls and a sleeve of intermediate length interposed between the inner and outer sleeves. This arrangement of the sleeves provides a graduated wall thickness of decreasing magnitude from

3

the bottom of the container to the top, comprising a three-ply thickness in the lower portion, two plies at the intermediate level and a single ply at the upper portion of the container, as illustrated in Fig. 6.

Another arrangement of the sleeves for the graduated wall thickness form of the invention is to snugly and slidably telescope the shortest sleeve over the exterior faces of the tray walls, and the longest sleeve over the interior faces thereof with the sleeve of intermediate length interposed between the inner and outer sleeves as shown in Fig. 7.

Still another modification which may be employed is to omit the interposed sleeve between the inner and outer sleeves. This modification is useful where it is desired to pack only a limited number of layers of rubber blocks in the container, thus reducing the weight and expansive force of the lading and a corresponding reduction in the height and reinforcement required for the walls of the container. This modification is shown in Figs. 8 and 9.

In view of the foregoing, it is apparent that one of the principal objects of the invention is to provide a heavy-duty, collapsible container for storing and transporting relatively large quantities of materials having cold flowing characteristics which may be secured in assembled form without the use of staples or other metallic means.

One object is to provide a heavy-duty container of at least three ply wall thickness throughout comprising a bottom tray with upstanding walls and a plurality of open-ended sleeves of greater length than the tray walls, at least one of the sleeves being snugly and slidably telescoped against the inner face of the tray walls with its lower edge seated on the bottom panel of the tray and at least one other sleeve snugly and slidably telescoped over the outer faces of the tray walls with its lower end in co-planar relation to the bottom panel.

Another object is to provide a relatively large, heavy duty container comprising a bottom tray with upstanding walls and at least three opened sleeves of greater length than the tray walls, one of the sleeves being telescoped over the inner face of the tray walls, another telescoped over the outer faces of the tray walls, and a third sleeve interposed between the inner and outer sleeves with its lower end seated on the upper edge of the tray walls.

A further object is to provide a heavy-duty container for storing and transporting relatively large quantities of cold flowing materials, the container comprising at least three ply wall thickness throughout and a cover member, the container being capable of supporting one or more superimposed loaded containers without appreciable distortion or damage.

Still another object is to provide a relatively large and economical heavy-duty container, simple in construction which may be shipped in knocked-down form and quickly assembled by the user without the use of staples, glue or other securing means.

With the above and other objects in view, the invention consists of the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the drawings and pointed out in the claims hereto appended, it being understood that various changes in the form, proportions and minor details of construction within the scope of the claims may be employed without departing from the spirit of the invention or sacrificing any advantages of the invention.

In the drawings:

Fig. 1 is an exploded perspective view of the collapsed component elements comprising the container of a preferred embodiment of the present invention wherein the upper ends of the sleeves are in co-planar relation when the container is assembled;

Fig. 2 is a perspective view of the container assembled from the components illustrated in Fig. 1 with a corner portion broken away to show the wall structure;

4

Fig. 3 is a vertical, sectional view of the container taken along lines 3—3 of Fig. 2;

Fig. 4 is a vertical, sectional view of the container taken along lines 4—4 of Fig. 2;

Fig. 5 is a vertical, sectional view of the container similar to Fig. 4 showing an inverted tray cover member inserted between the inner and outer sleeves;

Fig. 6 is a vertical, sectional view of a modified form of the container wherein the shortest sleeve is slidably and snugly telescoped on the interior faces of the bottom tray walls and the longest sleeve on the outer faces of the tray walls, while a third sleeve is interposed between the inner and outer sleeves;

Fig. 7 is a vertical sectional view of the container shown in Fig. 6 wherein the position of the shortest and longest sleeves is reversed.

Fig. 8 is a further modification wherein only two sleeves are telescoped about the tray walls, the longest sleeve being positioned against the interior faces of the tray walls, while the shortest sleeve is in slidably, snug engagement with the outer faces of the tray walls;

Fig. 9 is a vertical, sectional view similar to Fig. 7 but reversing the position of the sleeves with respect to the tray walls.

The invention will more readily be understood by referring in detail to the attached drawings wherein similar numerals or characters in the several figures denote the same parts.

The container in assembled form is denoted at B in Fig. 2 and is rectangular in outline. It is to be understood, however, that the shape of the container may be varied in that instead of being rectangular it may be of other polygonal outlines, i. e., square, hexagonal, octagonal etc.

The component parts embodying a preferred form of the invention wherein the blank for forming the tray and three sleeves in collapsed form for shipment are illustrated in Fig. 1.

The blank for forming the tray of the container is indicated at A, Fig. 1, the flat bottom panel of the tray is indicated at *a*. Side walls 1 of the tray are defined by longitudinal scores 2, while the end walls 3 are defined by transverse scores 4. Slots 5 define end wall flaps 6 which are foldable about extensions of the longitudinal scores 2. The open-ended sleeves are shown in collapsed form in Fig. 1, the inner sleeve being designated at 8, the intermediate sleeve at 9 and the outer sleeve at 10. The remote side edges of the sleeve blanks are joined by strips of tape 11.

In the view in Fig. 2 of the assembled container, the end wall 3 and the side wall 1 is shown in erected relation substantially perpendicular to the bottom panel *a* of the tray A with flap 6 in flatwise relation to the outer face of the side wall 1. The inner sleeve 8 is slidably and snugly telescoped over the inner face of the tray walls 1 and 3, the lower end portion of the outer sleeve 10, over the outer face of the tray walls 1 and 3, while the intermediate sleeve 9 is interposed between the inner and outer sleeves with its lower end edge 12 resting on the upper edge 13 of the end walls 3 and the upper edge 14 of the side walls 1. The lower end edges of the outer sleeve 10 are in co-planar relation with the bottom panel *a* of the tray, while the upper edges of each of the sleeves 8, 9 and 10 are in co-planar relation as shown at 16. It will be noted that flap 6, extending from the end wall 3, is positioned on the outer face of side wall 1 and that the outer sleeve 10 encloses the flap 6 and the similarly positioned flaps 6 at the other corners of the tray, leaving very slight spaces S between the side wall 1 and the adjacent portion of the outer sleeve 10. It should be noted that the space S shown in Figs. 2 to 9 inclusive is exaggerated for the purpose of clarity; due to the resiliency of the paper-board, when the containers are loaded, these slight spaces are substantially eliminated.

The container may be conveniently assembled by folding the side walls 1 and end walls 3 of the tray inwardly

5

into substantially right angular relation to the bottom panel *a* and folding flaps 6 on the outer faces of side walls 1. The outer sleeve 10 is slidably and snugly telescoped over the side and end walls 1 and 3 and flaps 6, thereby securing the tray in assembled position. The inner sleeve 8 is slidably and snugly telescoped over the inner faces of the side walls 1 and end wall 3 and the intermediate sleeve 9 is interposed between sleeves 8 and 10 with its lower edge 12, seating on the upper edges 13 and 14 of tray walls 3 and 1 respectively. This completes the assembly of the container illustrated in Figs. 2, 3, and 4.

Where it is desired to superimpose the loaded containers one upon the other as hereinbefore mentioned, a cover member B, shown in Fig. 5, which may be similar or identical with the bottom tray member A, is provided. The cover consists of a panel 17 with walls 18, the free end edges 19 of the walls abutting the upper edges 20 of the intermediate sleeve 9. In this form of the invention, the upper end 21 of the outer sleeve 10 is in coplanar relation with the exterior face of the cover panel 17, while the upper end edge 22 of the inner sleeve 8 abuts the inner face of the cover panel 17. This construction not only protects the contents of the container from contamination, but permits the containers to be stacked one upon the other.

A variation of the invention is illustrated in Fig. 6 wherein the telescoping sleeves are of varying length, the innermost sleeve 23 being shortest, the outer sleeve 24 longest, while the interposed, intermediate sleeve 25 is of such length so that its upper end edge terminates between the upper end edge of the inner and outer sleeves. This form of the invention is useful when relatively large quantities of synthetic rubber are to be packaged in a single container where it is unnecessary or not desired to stack the loaded containers one upon the other. This construction, illustrated in Fig. 6, results in a substantial saving in board and is useful for many purposes notwithstanding the fact that the container may be considerably taller than the container shown in Figs. 2, 3, 4, and 5. In Fig. 7 the position of the inner and outer sleeves 23 and 24 respectively, of the container shown in Fig. 6 is reversed.

The container shown in Figs. 8 and 9 is similar to the form shown in Figs. 6 and 7 with the intermediate sleeve 25 omitted. This container is adapted for packaging materials which do not require wall reinforcement of the magnitude provided in the forms illustrated in Figs. 2 to 7 inclusive and results in a further substantial saving of board.

6

While the container of the invention is described hereinbefore in a preferred form, especially for packaging synthetic rubber, it is susceptible to various modifications, well-adapted for packaging a wide variety of other materials both with and without the cold flowing characteristics associated with synthetic rubber and including various chemical compositions, granular materials and other products.

What we claim is:

1. A tall heavy duty rigid container for shipping and/or storing material therein comprising a relatively shallow collapsible tray having a flat bottom with an upstanding wall thereabout and a plurality of open-ended collapsible sleeves, the sleeves each being interiorly unobstructed throughout their lengths, snugly telescoped and of greater successive lengths relative to each other and the said upstanding wall, the lower portions of all the sleeves being in parallel relationship with each other and with the lower portion of at least one sleeve disposed within and in snug contacting relation with the inner surfaces of the upstanding wall, and with the lower end edge thereof in contacting relationship with the adjacent inner surface of the flat bottom and at least one other sleeve having its lower portion snugly engaging the outer surfaces of the upstanding wall and with its lower edge being substantially coplanar with the exterior surface of the flat bottom, the upper edge of the shortest sleeve terminating upwardly and beyond the upstanding wall, and the upper edge of the next successive sleeve terminating spacedly upwardly beyond the upper edge of said shortest sleeve to provide a stepped wall throughout the length of the container.
2. The container as defined in and by claim 1, wherein the inner sleeve is of less height than the outer sleeve.
3. The container as defined in and by claim 1, wherein the inner sleeve is of greater height than the outer sleeve.

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