Aug. 3, 1965 G. M. DONAHUE ETAL 3,198,328

PACKAGE FOR FLUENT MATERIALS

Filed Dec. 3, 1962 2 Sheets-Sheet 1

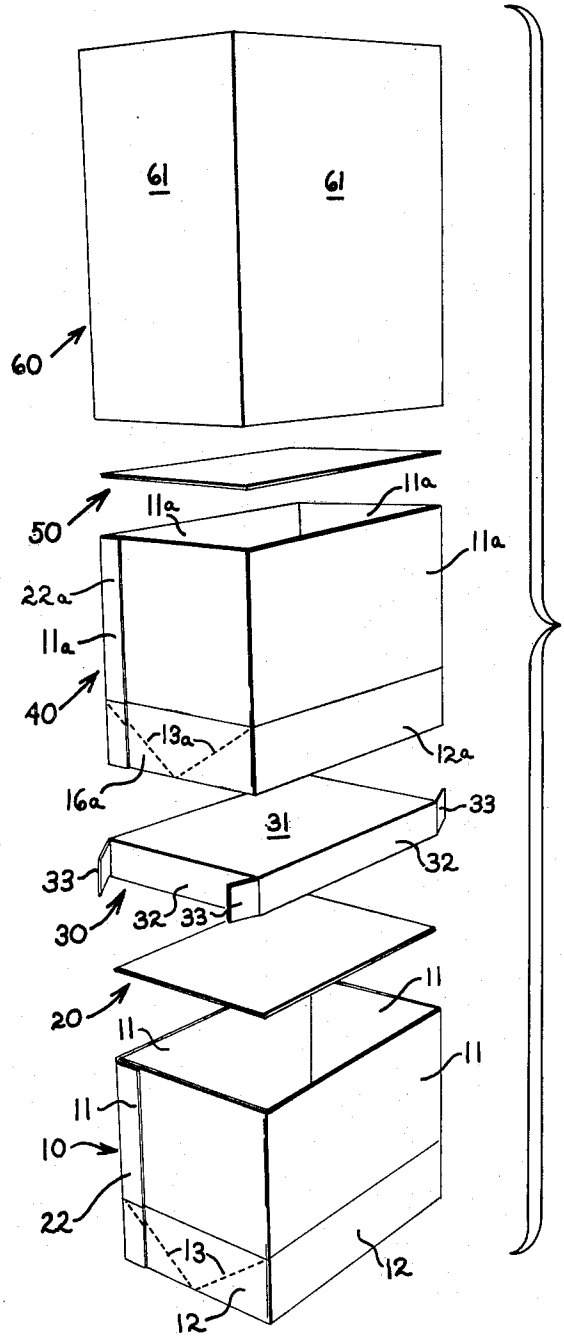


FIG. 1

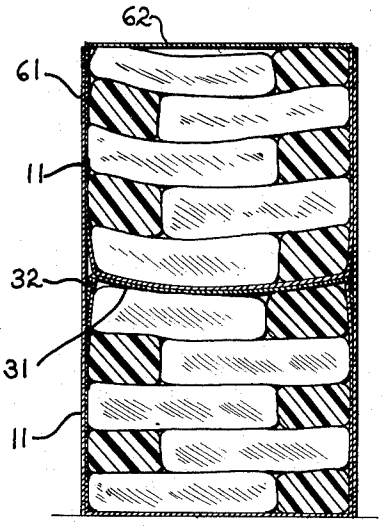


FIG. 3

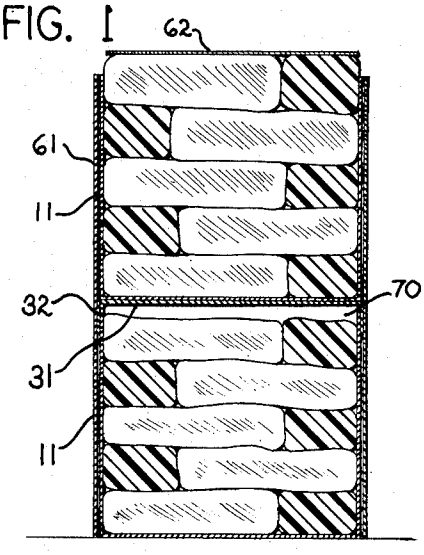


FIG. 2

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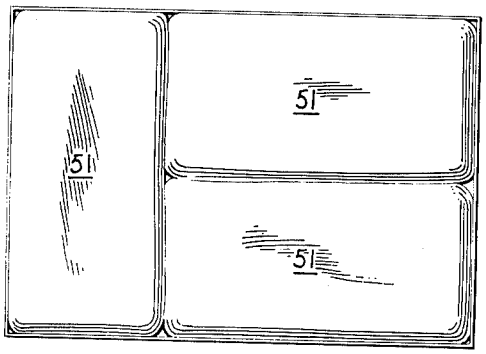


FIG. 4

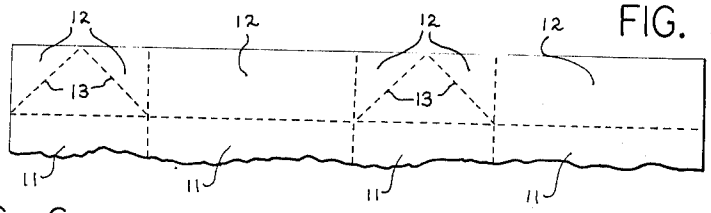


FIG. 5

FIG. 6

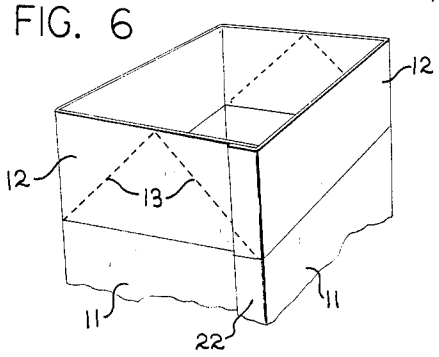
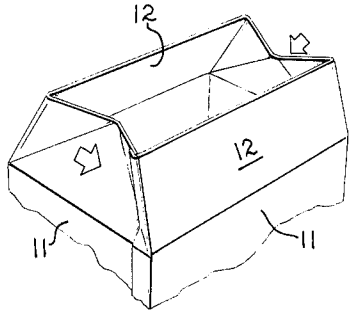


FIG. 7



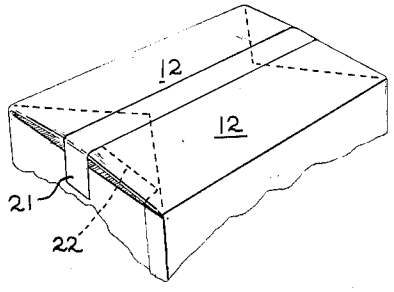


FIG. 8

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PACKAGE FOR FLUENT MATERIALS

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7 Claims. (Cl. 206—65)

This invention relates to a paperboard package for fluent materials, and more particularly to a paperboard package for materials having cold flow properties.

Fluent materials, such as granular products, and materials having cold flow properties, such as unprocessed rubber, are conventionally bulk shipped in paperboard packages containing in excess of two thousand pounds. Because these materials flow and are not self-sustaining, the packages are subject to unusually high lateral stresses. As a result of these stresses, considerable bulging of the side walls of conventional packages occurs and the packages quite frequently split open in transit. Another serious problem occasioned by bulging side walls is that such bulged packages are extremely difficult to remove from the vehicle in which they are shipped. The packages are originally placed in the vehicles in side by side relationship and after the side walls have bulged during transit they become locked together.

Accordingly, it is an object of this invention to provide means for preventing the bulging of the side walls in packages for fluent materials.

Another object of this invention is the provision of a simple, economical paperboard package for the packaging of fluent materials in general, and in particular, materials having cold flow properties.

A further object of this invention is the provision of a paperboard package for the packaging of products having cold flow properties wherein the weight of the packaged product is utilized to prevent side wall bulge.

Other objects and advantages of this invention will become apparent from the following description taken in conjunction with the accompanying drawings wherein are set forth, by way of illustration and example, the preferred embodiment of this invention.

FIG. 1 is an exploded, perspective view showing the paperboard components of the package of this invention;

FIG. 2 is a vertical sectional view showing the package of this invention immediately after it is assembled;

FIG. 3 is a vertical sectional view of the package of this invention after the packaged product has had an opportunity to settle;

FIG. 4 is a sectional plan view showing the arrangement of the packaged product within the package of this invention;

FIG. 5 is a partial plan view showing the closure flaps of the containers;

FIGS. 6, 7 and 8 are partial perspective views illustrating the steps in closing the end of a container used in the package of this invention.

In the package of this invention, the weight of the product is used to draw in the side walls of the package. This is accomplished by interposing one or more deformable, horizontal panels in the package and providing a space or void below each panel. As the load above each panel deforms the panel downwardly into the space provided, it also simultaneously draws inwardly the side walls of the container.

Referring to FIG. 1, the preferred embodiment of the package of this invention comprises, a first container 10, a pad 20, a restraining member 30, a second container 40, a second pad 50, and a sleeve 60. Each of the above described elements is preferably formed of corrugated

paperboard, with the thickness and weight of board being selected on the basis of the needs of a particular application.

The first and second containers described in connection with the preferred embodiment are identical and like numerals will designate like elements of each, with the elements of the second container being followed by suffix *"a."*

The first container 10 comprises a blank of corrugated paperboard which is scored to define four foldably connected side panels 11. The side wall panels are secured into a tubular configuration by a conventional manufacturer's joint 22. The manufacturer's joint can be secured by any conventional fastening means. A glued joint is preferred. Each of the side wall panels 11 has foldably attached at its lower free edge a closure flap 12. The closure flaps are foldably connected along their marginal edges, and an opposed pair of closure flaps have diagonal score lines 13 (disposed at 90° to each other) to form what is commonly referred to as a bellows-type bottom closure.

The pads 20 and 50 are rectangular blanks of corrugated paperboard which are adapted to span the interior bottom surface of the containers to provide a smooth surface.

The restraining member 30 is preferably a corrugated paperboard blank which is scored and slotted to form a central panel 31. The central panel 31 has foldably attached to its marginal edges side flaps 32. A pair of opposed side flaps have foldably attached to their marginal end edges corner flaps 33.

The sleeve 60 is preferably formed of corrugated paperboard and comprises four foldably connected panels 61. The panels are secured into a tubular configuration by conventional fastening means (not shown) such as described above.

The product described in association with the preferred package of this invention is unprocessed rubber which has cold flow properties. As used herein, a material having a cold flow property is one that will gradually distort or flow at room temperatures when subjected to a load (which may be its own weight). The unprocessed rubber, in its commercial form, is provided in 85 pound units 51 having a size of 7 x 14 x 28 inches.

Each of the first and second containers has its lower end closed in the manner illustrated in FIGS. 6, 7 and 8. The bottom closure is preferably secured in place by means of a length of tape 21. A bellows-type bottom closure is preferred because the slots that are normally found between closure flaps are eliminated, thereby eliminating the points of weakness, i.e., where stresses would otherwise concentrate. Referring to FIGS. 6 and 8, the manufacturer's joint 22 is preferably allowed to extend the full width of the closure flaps 12. This also serves to strengthen the lower corner of the container by not providing a starting point for the material to tear.

In assembling the package of this invention, the pad 20 is placed in the bottom of the first container 10 and then five layers of three units 51 each are placed in the first container in the manner shown in FIG. 4. The first container has an interior dimension of approximately 28½" x 42½" and a height of approximately 30". The five layers which have an initial height of 35", settle shortly after being placed in the first container to a height substantially equal to that of the container.

The restraining member 30 is placed atop the first container 10, and the flaps 32 folded alongside the side wall panels 11. The corner flaps 33 are folded normal to the flaps to which they are attached. The sleeve 60 is telescoped over the restraining member 30 and the first container 10. The sleeve 60 is sized to closely surround the first container and serves to securely lock the flaps 32

against the first container. The sleeve 60 and flaps 32 serve to secure together the central panel 31 and the upper edges of the side wall panels 11.

The second container 40 is assembled in the same manner as the first container and placed within the sleeve 60. Layers of units 51 are placed within the second container in the same manner as they are placed in the first container. A dust pad 62 may be placed on the last layer of units if desired.

Referring to FIG. 2, by the time the second container is positioned and filled, the units 51 in the first container 10 have settled sufficiently to provide a spare 70 having a height of approximately 2 inches. The central panel which is carrying approximately 1275 pounds, deforms into a concave configuration and occupies this space 70. Simultaneously, the upper edges of the side wall panels 11 are drawn inwardly, thereby counteracting the lateral stresses or the tendency for the side walls of the package to bulge. See FIG. 3.

It will be obvious to a person skilled in the art that the package of this invention can be practiced using a number of conventional containers. It is also to be noted that a package can be assembled according to this invention using more than one horizontal restraining member positioned along the vertical height of the container.

It will, of course, also be understood that various details of construction may be modified through a wide range without departing from the principles of this invention, and it is not, therefore, the purpose to limit the patent granted hereon otherwise than necessitated by the scope of the appended claims.

We claim:

1. A package for packaging materials having cold flow properties comprising:

(a) a first paperboard container, said first container comprising a plurality of side wall panels foldably connected together to define a tubular configuration and closure means for closing the lower end of said tubular configuration;

(b) a first quantity of said material disposed within said first container, said first quantity of material having a settled height less than the height of said first container;

(c) a restraining member disposed atop said first container, said member comprising a central panel spanning the upper open end of said tubular configuration, said central panel being positioned above said first quantity of material defining a space therebetween, and a plurality of flaps foldably connected to said central panel and folded into contiguous relationship with the exterior surfaces of said side wall panels, said flaps being secured to the upper edges of said first container;

(d) a paperboard sleeve telescoped over said restraining member and first container, said sleeve arranged to firmly hold said flaps against said first container;

(e) a second paperboard container disposed atop said retaining member and supported thereon, said second container comprising a plurality of side wall panels foldably connected together to define a tubular configuration and closure means for closing the lower end of said tubular configuration;

(f) a second quantity of said material disposed within said second container, the weight of said second quanity of material downwardly deforming said central panel into said space and into a concave formation, thereby drawing inwardly the upper edges of the side wall panels of said first container.

2. A package as defined in claim 1, wherein said sleeve extends the combined heights of said first and second containers.

3. A package as defined in claim 1, wherein said materials comprise a plurality of units of unprocessed rubber.

4. A package as defined in claim 1, wherein said closure means for said first container comprises a bellows-type closure foldably connected to said side wall panels.

5. A package for fluent materials comprising:

(a) a first paperboard container having a continuous side wall and an open upper end;

(b) a first quantity of said material disposed within said first container, said first quantity of material having a settled height less than the height of said first container;

(c) a deformable panel spanning said upper open end and being positioned above said first quantity of material and defining a space therewith;

(d) a plurality of flaps foldably connected to said panel each of which is folded into continuous relationship with said continuous side wall and secured thereto at a locus adjacent said upper open end thereof;

(e) a second paperboard container containing a second quantity of said material disposed atop said deformable panel and supported thereon, the weight of said second container and said second quantity of material downwardly deforming said panel into a concave formation, thereby drawing inwardly the upper edges of said first container; and

(f) a paperboard sleeve telescoped over said containers and closely surrounding said containers.

6. A package as defined in claim 5, wherein said sleeve extends the combined heights of said first and second containers.

7. A package as defined in claim 5, wherein said materials comprise a plurality of units of unprocessed rubber.

References Cited by the Examiner

UNITED STATES PATENTS

1,344,147	6/20	Potter	229—14
1,840,677	1/32	Miessler	229—14
1,882,524	10/32	Sherman	229—14
1,908,940	5/33	Weidel	206—46
2,142,142	1/39	Newsom	229—14
2,539,514	1/51	Jenett	206—65
2,634,038	4/53	George	229—14
2,796,979	6/57	Buttery	206—45.31
2,893,617	7/59	George	229—14
2,954,140	9/60	Sutherland	206—46
3,056,536	10/62	Smith	229—14
3,124,246	3/64	Remer	206—46

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