

[54] CONTAINER HAVING CORNER POST HOLDERS

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[58] Field of Search ..... 229/23 C, DIG. 1, 14 C, 229/49

[57] ABSTRACT

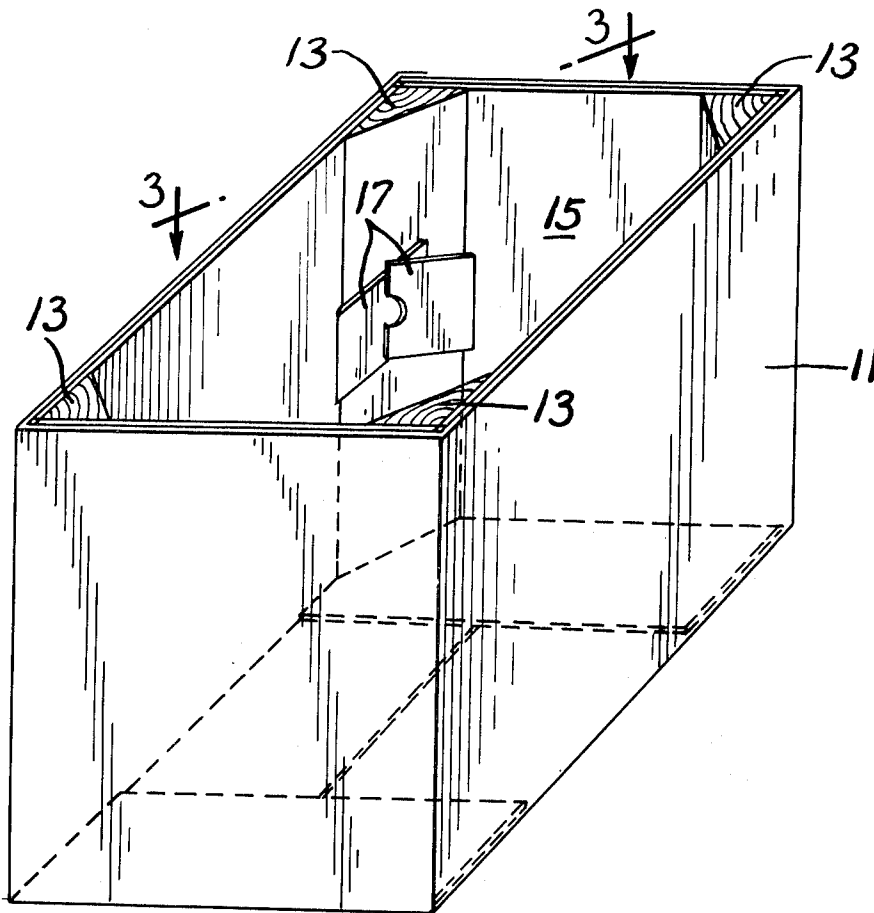
A container having corner post holders formed from a corrugated fiberboard liner which is laminated to the interior surface of the container outer blank. The holders are tabs which are pulled inward to position the corner post behind them.

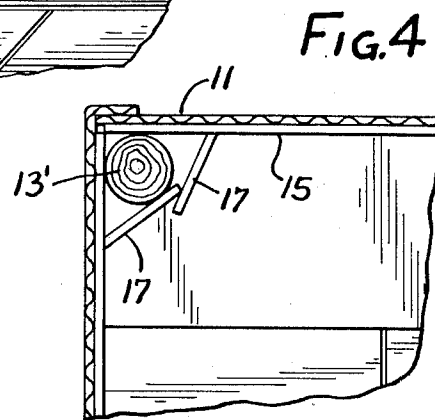
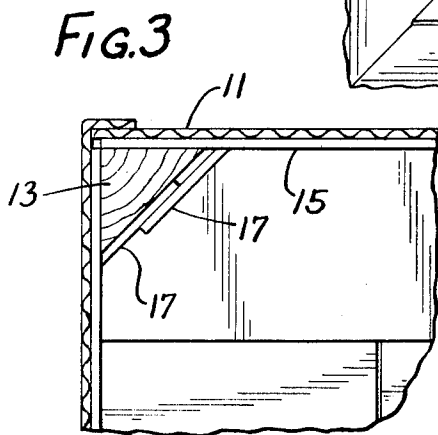
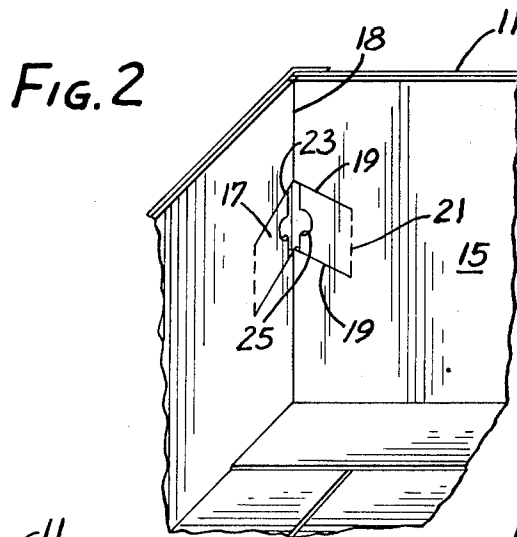
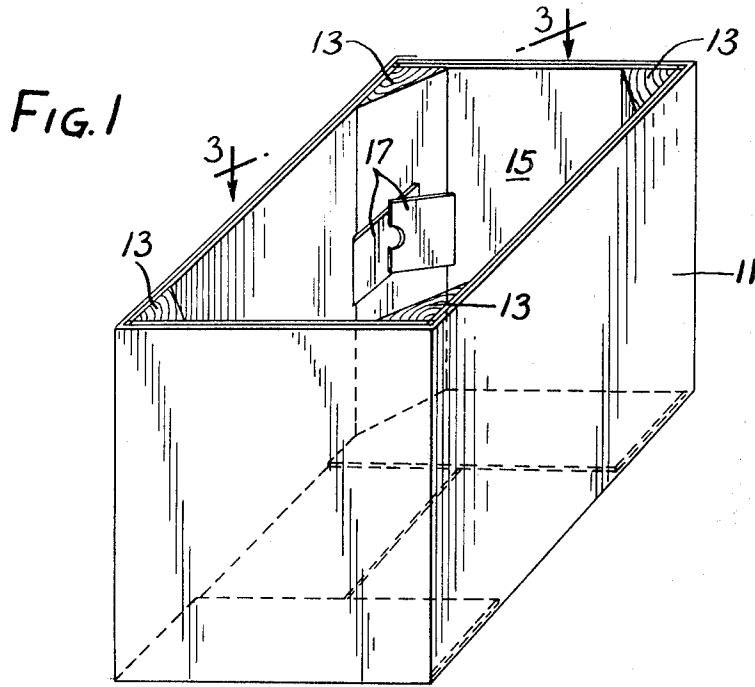
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9 Claims, 4 Drawing Figures





## CONTAINER HAVING CORNER POST HOLDERS

The present invention is directed to reinforced fiberboard containers and more particularly to bulk containers which are designed to hold large amounts of flowable material.

Fiberboard bulk containers which hold large amounts of flowable materials, for example 2,000 pounds, must be strong enough to withstand the stresses in the sidewalls which result from the pressure applied by the flowable material. A common method of reinforcing such containers to allow their stacking is to place rigid posts in the interior corners of the containers so that the rigid posts absorb the vertical load of the containers stacked above them.

To assist in the location of such corner posts within the containers, retaining tabs are often provided to keep the posts in position until the containers are filled. Commonly, the tabs cooperate with the corner of the container to form a slot in which the post is tightly fitted. Formation of the tabs from the container sidewalls may leave openings into the interior of the container which are undesirable. It is also desirable that such tabs allow for quick and efficient placement of the corner post within the container and yet be effective in holding the post in position until filling has been accomplished.

It is an object of the present invention to provide an improved retention means for holding a post in the corner of a container.

It is another object of the invention to provide a reinforced container having a retaining tab arrangement which allows efficient placement of the posts within the container.

These and other objects and advantages of the invention will become apparent upon reading the following detailed description in conjunction with the accompanying drawings in which:

FIG. 1 is a perspective view of a reinforced container having various features of the present invention, the end closure flaps not being shown;

FIG. 2 is a perspective view of one corner of the container shown in FIG. 1 before insertion of a corner post;

FIG. 3 is a section view of the container of FIG. 1 taken along lines 3—3; and

FIG. 4 is a section view similar to FIG. 3 showing the employment of a different shaped post.

The illustrated embodiment of the present invention comprises a rectangular container 11, four triangular posts 13, and a liner 15 having corner post retaining tabs 17 adjacent the corners of the container 11.

The illustrated container 11 may be any of the typical containers that are usually used as bulk containers. For example, it may be a regular slotted fiberboard container having closure flaps at top and bottom. Likewise, it may have a flanged top or bottom, if desired. The outer blank from which the container is formed is cut from corrugated fiberboard in a manner well known to the industry. It is preferred that the flutes of the corrugated extend vertically, i.e., parallel to the score lines which define the edges of the container.

The posts 13 are shown as being made of wood and have a triangular cross section. The posts 13 are proportioned to extend vertically from the bottom of the container 11 to a location flush with the top of the con-

tainer. Other shapes of posts 13, as well as posts made of other materials, may be used however.

The reinforcing liner 15 is made of corrugated fiberboard and is fixed to the interior surface of panels of the container 11 by a suitable adhesive. The liner 15 covers the major portion of the sidewalls. The liner 15 may terminate short of the interior corners of the container 11 or may continue into the corner. The liner 15 may be a continuous sheet or it may be made of two or more separate panels. In the preferred embodiment, the liner 15 is made from a pair of sheets, both of which terminate just slightly short of opposite corners of the container 11. The liner 15 has the flutes of the corrugated from which it is formed extending in horizontal alignment to provide the best reinforcement to the sidewalls and to provide good strength for the retaining tabs 17. The liner 15 preferably extends vertically from the top of the container 11 to the bottom; however the reinforcing liner may be of less than full height of the container.

Formed in the liner 15, at each end thereof and centrally where the edge of the container 11 is located, are the retaining tabs 17. In the preferred embodiment, these tabs 17 are vertically centered, and they are each formed by two parallel cuts 19 which extend from the score line 18 of the liner 15 that is located in the corner of the container 11. The cuts 19 may be horizontal; however, the cuts preferably extend downward from the score line 18, at an angle of at least about 20°. The ends of the cuts 19 which are remote from the corner of the container 11 are connected by a vertical score line 21, which hinges the tabs to the remainder of the liner 15. In the preferred embodiment, the score line 21 extends transverse to the flutes of the liner 15, which are preferably horizontal, and thus provides excellent holding power in the tabs 17. When adhesively attaching the liner 15 to the outer container blank, adhesive is not applied in the area of the tabs 17 so that they are free to be pulled away from the container panel.

To facilitate opening the hinged tabs 17, they are terminated short of the corner, as by providing a generally vertical cut 23 between the cuts 19. The vertical cut 23 is preferably notched to provide a finger hole 25 at the free edge of the tab. The spacing of the free edge a small distance from the corner and the inclusion of the finger hole 25 allow the user to easily pull out the tabs 17 when setting-up the box.

It is preferred that there be two tabs 17 in each corner of the container 11 to effectively trap each of the posts 13 in position within the container. However, for certain applications, it is conceivable that one tab may provide sufficient bracing because the hinged connection provides a surprisingly strong force which urges the tab 17 back toward the plane of the liner 15. This force results from the disposition of the score line 21 transverse to the flutes of the corrugated liner so that the fluted medium retains a substantial amount of strength at the hinged connection. The line of weakness provided by the score line minimizes irregular crushing at the hinged connection upon opening the tabs 17 which would have an adverse effect upon the flutes of the corrugated fiberboard. Additionally, by having the flutes of the liner 15 extend transversely to the flutes of the outer container blank 11, increased bursting strength is achieved in the assembled reinforced container.

The reinforced container is shipped to the user in a substantially flat configuration, as in the case of any regular slotted container. The user readies the container for use by first setting up the container in the normal manner for a regular slotted container, as for example by closing the bottom closure flaps illustrated in FIG. 1. The user then reaches into the container and pulls the tabs 17 toward the center of the container a sufficient distance to allow a post 13 to be positioned behind the tabs and against the corner of the container 11. The tabs 17 bear against the post 13, holding it in the desired alignment in the corner of the container.

As may be seen in FIGS. 3 and 4, the posts may be triangular or round. Square or other suitably shaped reinforcing posts 13 may also be accommodated.

Thus, the present invention provides a reinforced container having corner post holders which are simple in design and which can be easily set up. The oblique design of the tabs 17 facilitates their being opened by one reaching into the container from the top. The outer blank remains unapertured because the tabs 17 are formed totally from the inner liner, and thus the container contains no holes which would provide a potential entry for contamination that would be a problem for shipping some materials.

While one embodiment of the present invention has been shown and described, it should be apparent that various modifications may be made therein without departing from the spirit and scope of the invention. Various of the features of the invention are set forth in the claims which follow.

What is claimed is:

1. In a polygonal container formed from an outer blank having vertical posts located in one or more of its corners and means for maintaining said posts in proper alignment, the improvement which comprises corru-

gated fiberboard sheet material fixed to the interior vertical surface of said container and extending substantially about the perimeter of said container, said sheet material being laminated to the outer blank, hinged tabs being formed in said sheet material adjacent the corners of the container, said tabs having free edges spaced apart from the corner of the container to allow said tabs to be manually grasped and opened to permit the insertion of a vertical post therebehind.

2. The container of claim 1 wherein said hinged tabs are connected by a line of weakness to the remainder of said sheet material, said line of weakness extending transverse to the flutes of said corrugated sheet.

3. The container of claim 2 wherein the upper and lower boundaries of said tabs are defined by a pair of parallel cuts extending at an oblique angle to the horizontal.

4. The container of claim 3 wherein a notch is provided in said free edge of said tabs.

5. The container of claim 3 wherein said angle is at least about 20°.

6. The container of claim 1 wherein said sheet material extends for substantially the vertical height of said container.

7. The container of claim 6 wherein said container is formed of corrugated fiberboard having flutes which extend vertically and said sheet material flutes are horizontal.

8. The container of claim 7 wherein said liner is adhesively connected to the inner surface of said outer blank throughout the major portion of its surface area except for the region of said tabs.

9. The container of claim 1 wherein two of said tabs are provided adjacent each corner of said container, said free edges of each pair of tabs facing each other.

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