SUPPORT FOR CAGE AND BOTTLE STYLE INTERMEDIATE BULK CONTAINER

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ABSTRACT

The present invention provides a system and method for using a liner in conjunction with the cage of a bottle and cage type IBC. The invention involves use of a support that is placed inside the cage of a bottle and cage type IBC. In one embodiment, the support may be a thin sheet of material that conforms to the inner surface of the cage. In an alternative embodiment, the support may be a bottle from a cage and bottle type IBC that has been modified by removing the discharge valve spout. In the case that a liner is used in conjunction with the cage, the support forms a barrier between the liner and the cage to prevent the liner from extruding through the bars of the cage. An aperture in the support may allow a discharge valve of a liner to extend outwardly for easy access to the item.
SUPPORT FOR CAGE AND BOTTLE STYLE INTERMEDIATE BULK CONTAINER

BACKGROUND OF THE INVENTION

[0001] 1. Technical Field

[0002] The present invention relates generally to containers and more specifically to containers adapted for storing and shipping bulk materials.

[0003] 2. Related Art

[0004] Much of our economy today is driven by goods and other items that have been shipped long distances. Of course, shipment of items in bulk is normally more cost effective than shipments of the same items in smaller units. To this extent, one of the biggest challenges for producers of an item lies in finding containers and methods for shipping it, especially in bulk, to its desired destination and storing it upon arrival.

[0005] One type of container that is often used to transport materials in bulk is called an Intermediate Bulk Container (IBC). IBGs are normally designed to be large enough to contain large quantities of goods or materials, while being small enough to be placed within a larger container, such as the trailer of a semi-truck, a railroad car, a shipping container, or a warehouse. To this extent, IBGs are often designed to be able to be stackable and to be moved on a pallet, such as by a fork lift. IBGs come in a variety of shapes and sizes, may be used for transporting and storing all types of items, including liquids and solids, and are usually made of strong and durable substances such as glass, metal, or plastic, although other substances such as cardboard are often used. IBGs may be used to transport substances over great distances and to store substances for long periods of time.

[0006] One particular type of IBC is that often used is the cage and bottle type IBC. A typical cage and bottle type IBC has a rigid outer framework, called a cage, that often has one or more walls made form supports such as steel bars. The cage may also be mounted to a pallet to make moving the assembly more easy. A bottle, often made of hard molded plastic, is placed inside the cage for storing or transporting solid or liquid goods or materials. The bottle may be removed from the cage after use for cleaning or disposal, and the cage may be reused with the same or a different bottle.

[0007] One drawback of the cage and bottle type IBC is that the replacement of bottles can become fairly expensive. It is sometimes difficult to adequately clean a bottle after it has been used, leading to the possibility of cross-contamination of shipped or stored materials. In addition, certain laws, especially with respect to food products, may prohibit the reuse of the bottles. Oftentimes, this leads to a bottle being used only once before it must be disposed of. Due to the fact that the bottles are often made of molded plastic, the costs associated with constantly replacing bottles may be prohibitive. In addition, there may costs associated with disposal of the bottle may increase the overall cost to use cage and bottle type IBGs.

[0008] Liners, such as cardboard liners or soft plastic liners used in conjunction with cardboard IBGs are less expensive and easier to dispose of than bottles. These liners, however, often cannot be used in conjunction with the cages of cage and bottle type IBGs because the filling of the liner with a good or material, particularly a liquid one, may cause the liner to extrude between the bars of the cage. Furthermore, liners that are currently used to line the bottles of cage and bottle type IBGs are difficult to install and require specific installation methods, which may tend to discourage potential users from employing this type of liner. This may lead to undue pressure on the liner or cause the liner to become caught on an outside object, leading to possible failure of the soft plastic liner and spoilage of the good or material inside.

[0009] What is needed is a system and method for using a liner in conjunction with the cage of a bottle and cage type IBC.

SUMMARY OF THE INVENTION

[0010] The present invention provides a system and method for using a liner in conjunction with the cage of a bottle and cage type IBC. The invention involves use of a support that is placed inside the cage of a bottle and cage type IBC. In one embodiment, the support may be a thin sheet of material, such as a sheet of hard plastic, that conforms to the inner surface of the cage. In an alternative embodiment, the support may be a bottle from a cage and bottle type IBC that has been modified by removing the discharge valve spout. In the case that a liner is used in conjunction with the cage, the support forms a barrier between the liner and the cage to prevent the liner from extruding through the bars of the cage. The support may overlap at its ends to add stability and/or to ensure that a barrier is formed with respect to the entire inner surface of the cage. The support may also have at least one top flap to improve the structural integrity of the cage and/or to form a cover for the item inside. An aperture in the support may allow a discharge valve of the liner to extend outwardly for easy access to the item. The support may allow the cage to be used many times without having to purchase replacement bottles.

[0011] In a first aspect of the invention is provided a support for use with a cage of a bottle and cage style Intermediate Bulk Container having walls, the support comprising a generally planar support member having a first and second surface, wherein the support member is folded to form a three dimensional structure within the cage, and wherein the first surface abuts substantially all of an interior portion of the walls of the cage.

[0012] In a second aspect of the invention is provided a container, comprising: a cage for use with an Intermediate Bulk Container, the cage having walls that include bars, a liner positioned within the cage for holding an item to be at least one of shipped and stored, and a generally planar support member support member adapted to be positioned between the liner and an substantially all of an interior portion the walls of the cage to prevent the liner from extruding through a space between the bars.

[0013] In a third aspect of the invention is provided a method for placing an item within a cage of a cage and bottle style Intermediate Bulk Container, comprising: providing the cage, the cage having walls; positioning a substantially planar support member within the cage, wherein the support member is folded in such a way that a first surface of the
support member abuts substantially all of an interior portion of the walls of the cage; positioning a liner within the cage, wherein the support member is between the liner and the walls of the cage; and filling the liner with the item.

[0014] In a fourth aspect of the invention is provided a support for use with a cage of a bottle and cage type Intermediate Bulk Container (IBC), the support comprising: a bottle of a bottle and cage type IBC, wherein the bottle has been modified by removing a discharge valve spout.

[0015] The foregoing and other features of the invention will be apparent from the following more particular description of embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The embodiments of this invention will be described in detail, with reference to the following figures, wherein like designations denote like elements, and wherein:

[0017] FIG. 1 shows a perspective view of one embodiment of a support of the present invention;

[0018] FIG. 2 shows a perspective view of an alternative embodiment of a support of the present invention;

[0019] FIG. 3 shows a perspective view of a container having a cage of an Intermediate Bulk Container (IBC) and a support in one embodiment of the invention;

[0020] FIG. 4 shows a perspective view of a container having a cage of an Intermediate Bulk Container (IBC) and a support in an alternative embodiment of the invention; and

[0021] FIG. 5 shows a flow diagram for placing an item within a cage of a bottle and bottle style IBC.

DETAILED DESCRIPTION OF THE INVENTION

[0022] The present invention provides a system and method for using a liner in conjunction with the cage of a bottle and bottle type IBC. The invention involves use of a support that is placed inside the cage of a bottle and cage type IBC. In one embodiment, the support may be a thin sheet of material, such as a sheet of hard plastic, that conforms to the inner surface of the cage. In an alternative embodiment, the support may be a bottle from a cage and bottle type IBC that has been modified by removing the discharge valve spout. In the case that a liner is used in conjunction with the cage, the support forms a barrier between the liner and the cage to prevent the liner from extruding through the bars of the cage. The support may overlap at its ends to add stability and/or to ensure that a barrier is formed with respect to the entire inner surface of the cage. The support may also have at least one top flap to improve the structural integrity of the cage and/or to form a cover for the item inside. An aperture in the support may allow a discharge valve of the liner to extend outwardly for easy access to the item. The support may allow the cage to be used many times without having to purchase replacement bottles.

[0023] With reference to the accompanying drawings, FIG. 1 shows a perspective view of one embodiment of a support 10 of the present invention. Support 10 is a generally and/or substantially planar object having a first surface 12 and a second surface 14. Support 10 may be substantially rectangular as illustrated in FIG. 1 or, in the alternative, may be circular, ovoid, or any other polygonal or non-polygonal shape. Support 10, in a preferred embodiment, may be made of corrugated plastic, but may also include any other material used to construct a generally and/or substantially planar object, including, but not limited to wood, plastic, metal, ceramics, cloth, graphite, polymer, laminate, or any other material now known or later developed in the art. Support 10 is adapted to be folded along folds 16a-16d to form a three dimensional structure 20. At least one of folds 16a-c may include a living hinge or other type of hinge that allows portions 18a-d of support 10 to rotate with respect to each other or, in the alternative, at least one of folds 16a-c may secure portions 18a-d of support 10 at a specific angle 19. Three dimensional structure 20 formed by support 10 may have four sides 18a-d as shown in FIG. 1 or, in the alternative may have greater or fewer sides 18a-d as required by the user. Furthermore, three dimensional structure 20 may have no folds 16a-d, but support 10 may instead be bent to form a generally cylindrical structure.

[0024] Support 10 may include a top flap 24 that may be formed by folding a portion of support 10 at fold 16c. In addition, support 10 may include an overlap member 22, formed with a fold 16d, that overlaps with a portion 18d of support 10 when three dimensional structure 20 is formed. Furthermore, one or more surfaces 18a-18d may include an aperture.

[0025] FIG. 2 shows a perspective view of an alternative embodiment of a support 40 of the present invention. Support 40 is designed to be used in conjunction with a cage 52 (FIG. 4) of a cage and bottle type IBC. Support 40 comprises a bottle 41 of a cage and bottle type IBC. Bottle 41 may originally include a top fill point 42 and a discharge valve spout 48 to which a discharge valve may be coupled. Support 40 is formed by modifying bottle 41 to remove discharge valve spout 48. The removal of discharge valve spout 48 from bottle 41 forms an aperture 44. Modification of bottle 41 may include cutting a portion 46 surrounding discharge valve spout 48 and removing discharge valve spout 48 to form aperture 44. In this configuration, a liner (not shown) may be inserted into support 40 through top fill point 42 such that a discharge valve (not shown) of liner extrudes through aperture 44 of bottle 41. Aperture 44 formed by the removal of discharge valve spout 48 may be adapted to allow liner to be positioned with discharge valve extruding through aperture 44 without having to remove or otherwise modify any portion of the discharge valve.

[0026] FIG. 3 is a representation of one embodiment of a container 50 that utilizes support 20 in conjunction with a cage 52 of an Intermediate Bulk Container (IBC). As depicted, cage 52 includes at least one wall 54 having a number of cage supports 56. As shown, cage supports 56 have spaces 57 between them. Container 50 is shown in this embodiment with cage 52 affixed to a pallet 58 although cage 52 with no pallet 58 is envisioned. Container 50 also includes a liner 60 positioned within cage 52 for holding an item (not shown) to be stored or transported. Liner 60 may be made of soft plastic, cardboard, or any other material now known or later developed for holding an item of any type. Liner 60 may also include one or more cassettes 64, which
may be positioned on top of liner 60 as shown in FIG. 2, below liner 60 (not shown) or elsewhere with respect to liner 60.

[0027] Support 20 of container 50 is positioned between liner 60 and cage 52 with first surface 12 abutting substantially all of the inner portion of wall 54 of cage and second surface 14 abuts an exterior portion of liner 60. When container 50 is in this configuration, support 10 prevents liner 60 from extruding through space 57 between cage support 56 of wall 54 of cage 52. A lower portion 18 (FIG. 1) of support 20 may be positioned between cage 52 and pallet 58 to further prevent extrusion of liner. Top flap 22 may fold downward to improve structural integrity of support 10 and/or form a cover for liner 60 containing the item. In addition, a discharge valve 68 of liner 60 may extrude from aperture 24 of support 20 to allow access item, such as placing into/discharging item from liner 60.

[0028] FIG. 4 is a representation of one embodiment of a container 51 that utilizes support 40 in conjunction with a cage 52 of an Intermediate Bulk Container (IBC). As depicted, cage 52 includes at least one wall 54 having a number of cage supports 46. As shown, cage supports 56 have spaces 57 between them. Container 51 is shown in this embodiment with cage 52 affixed to a pallet 58 although cage 52 with no pallet 58 is envisioned. Container 51 also includes a liner 60 positioned within cage 52 for holding an item (not shown) to be stored or transported. Liner 60 may be made of soft plastic, cardboard, or any other material now known or later developed for holding an item of any type.

[0029] Support 40 of container 51 is positioned between liner 60 and cage 52 with first surface 12 abutting substantially all of the inner portion of wall 54 of cage and second surface 14 abuts an exterior portion of liner 60. Liner 60 may be inserted into support 40 thought top fill point 42 such that discharge valve 68 of liner 60 extrudes through aperture 44 of support 40. Discharge valve 68 of liner 60 may be made to extrude through aperture 44 of support without the need to modify any portion of discharge valve 68. When container 51 is in this configuration, support 40 prevents liner 60 from extruding through space 57 between cage support 56 of wall 54 of cage 52.

[0030] FIG. 5 shows a flow diagram for placing an item within cage 52 of a cage and bottle style IBC. In step S1 cage 52 is provided. As stated above, cage 52 has at least one wall 54 that includes cage supports 56 having spaces 57 between them. In step S2 support 10 is positioned within cage 52. As stated above, support 10 may be folded along folds 16a-d (FIG. 1) to form three dimensional object 20. First surface 12 of support 10 abuts substantially all of an interior portion of wall 54 of cage 52. In step S3 liner 60 is positioned within cage 52 such that support 10 is positioned between liner 60 and wall 54 of cage 52. Finally, in step S4, liner 60 is filled with an item such as through discharge valve 68 extruding through aperture 24. As stated above, item may be any type of item and may include liquid or solid components.

[0031] While this invention has been described in conjunction with the specific embodiments outlined above, it is evident that many alternatives, modifications and variations will be apparent to those skilled in the art. Accordingly, the embodiments of the invention as set forth above are intended to be illustrative, not limiting. Various changes may be made without departing from the spirit and scope of the invention as defined in the following claims.

What is claimed is:

1. A support for use with a cage of a bottle and cage style Intermediate Bulk Container having walls, the support comprising a generally planar support member having a first and second surface, wherein the support member forms a three dimensional structure within the cage, and wherein the first surface abuts substantially all of an interior portion of the walls of the cage.

2. The support of claim 1, wherein the support member is corrugated plastic.

3. The support of claim 1, further comprising a top flap.

4. The support of claim 1, wherein the support member is used in conjunction with a liner, which abuts the second surface, for separating contents of the cage from the support member.

5. The support of claim 4, the cage having bars, wherein the support member prevents the liner from extruding through a space between the bars.

6. The support of claim 1, the support member having an aperture for receiving a discharge valve.

7. The support of claim 1, wherein the cage is mounted to a pallet and wherein a portion of the support member is positioned between the cage and the pallet.

8. A container, comprising:

- a cage for use with an Intermediate Bulk Container, the cage having walls that include cage supports;

- a liner positioned within the cage for holding an item to be at least one of shipped and stored; and

- a generally planar support member support member adapted to be positioned between the liner and an substantially all of an interior portion of the walls of the cage to prevent the liner from extruding through a space between the bars.

9. The container of claim 8, wherein the support member has a first and second surface, and wherein the first surface abuts substantially all of an interior portion of the walls of the cage and the second surface abuts an exterior portion of the liner.

10. The container of claim 8, wherein the support member is corrugated plastic;

11. The container of claim 8, further comprising a top flap for at least one of to improving a structural integrity of the support and forming a cover for the item.

12. The container of claim 8, the support member having an aperture for receiving a discharge valve.

13. The container of claim 1, wherein the cage is mounted to a pallet and wherein a portion of the support member is positioned between the cage and the pallet.

14. A method for placing an item within a cage of a cage and bottle style Intermediate Bulk Container, comprising:

- providing the cage, the cage having walls;

- positioning a substantially planar support member within the cage, wherein the support member is folded in such a way that a first surface of the support member abuts substantially all of an interior portion of the walls of the cage;

- positioning a liner within the cage, wherein the support member is between the liner and the walls of the cage; and

- filling the liner with the item.
15. The method of claim 14, wherein the positioning of the liner allows a discharge valve for accessing the item to extrude through an aperture of the support member.

16. The method of claim 14, wherein the item is a liquid.

17. A support for use with a cage of a bottle and cage type Intermediate Bulk Container (IBC), the support comprising:

   a bottle of a bottle and cage type IBC, wherein the bottle has been modified by removing a discharge valve spout.

18. The support of claim 17, wherein the modification includes cutting a portion of the bottle surrounding the discharge valve spout to form an aperture in the bottle.

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