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Diao

(54) **BARE LINER BULK BAG**

(71) Applicant: **Yuan Da Plastic Fabric Corp.**, Fremont, CA (US)

(72) Inventor: **Qizhong Diao**, Fremont, CA (US)

(73) Assignee: **Yuan Da Plastic Fabric Corp.**, Fremont, CA (US)

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Related U.S. Application Data

(60) Provisional application No. 61/756,350, filed on Jan. 24, 2013.

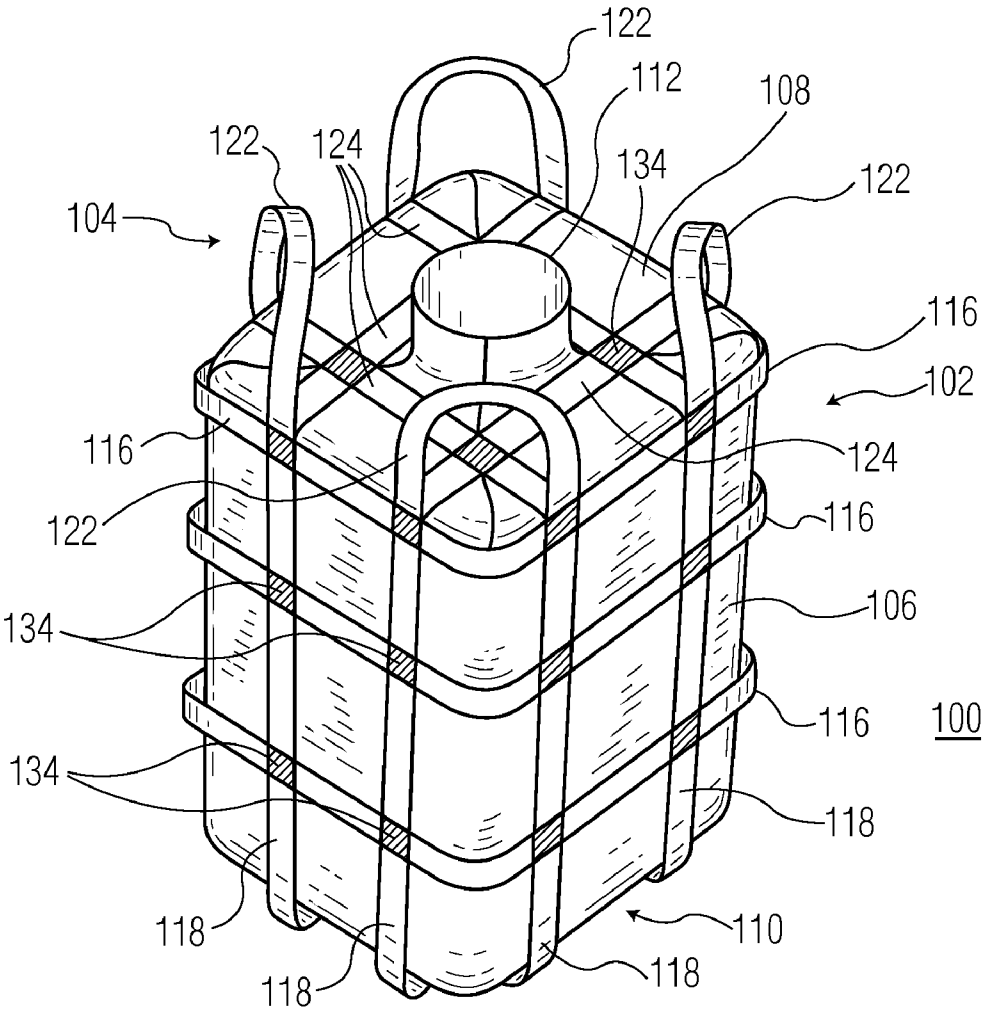
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CPC ***B65D 29/00*** (2013.01)
USPC **383/7**; 156/60

(57) **ABSTRACT**

A bare liner bulk bag and method of making the bare liner bulk bag uses a liner that is supported by a lifting system. The liner is configured to have an interior space to hold material. The lifting system includes at least one vertical strap, at least one horizontal strap and at least one bottom strap, which are connected to each other to define a volume into which the liner can be positioned without a woven fabric shell.



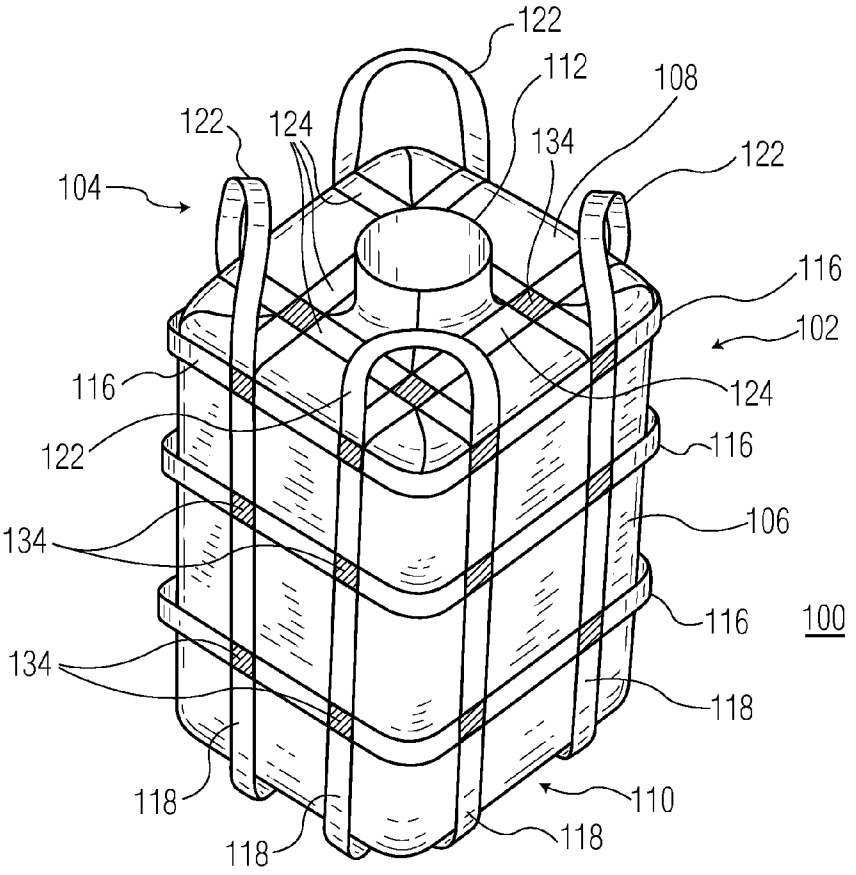

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FIG. 1

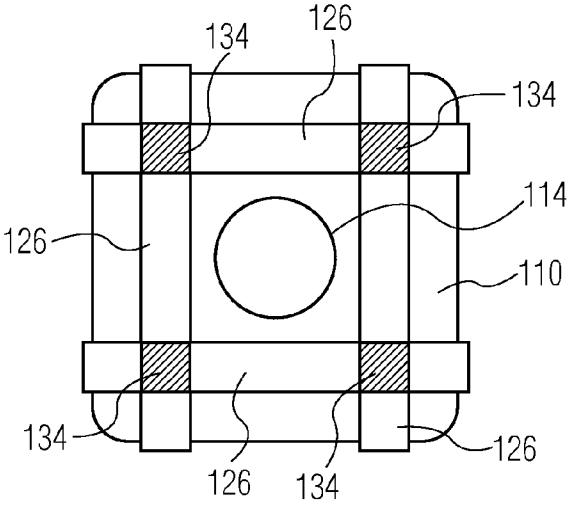

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FIG. 2

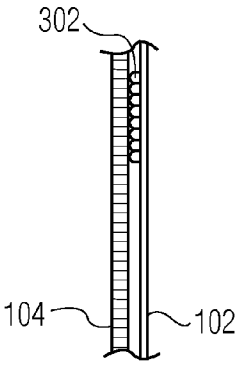


FIG. 3

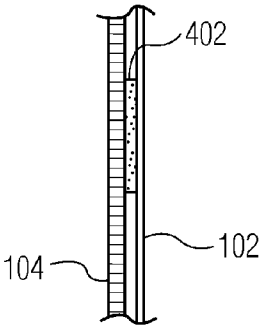


FIG. 4

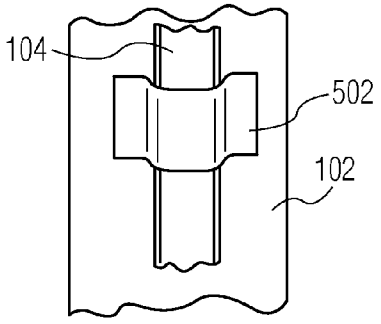


FIG. 5

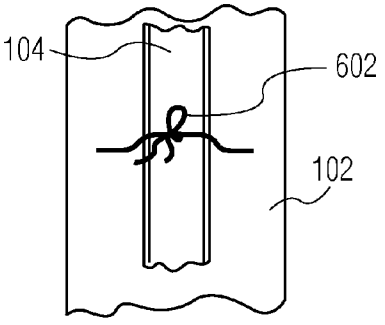


FIG. 6

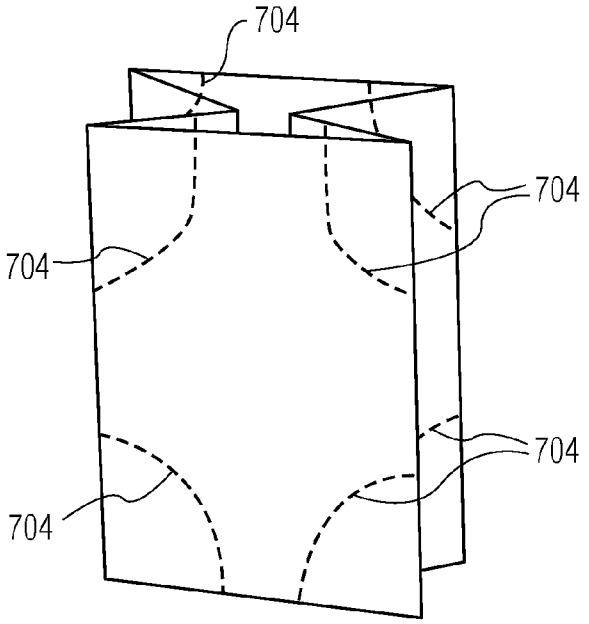

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FIG. 7A

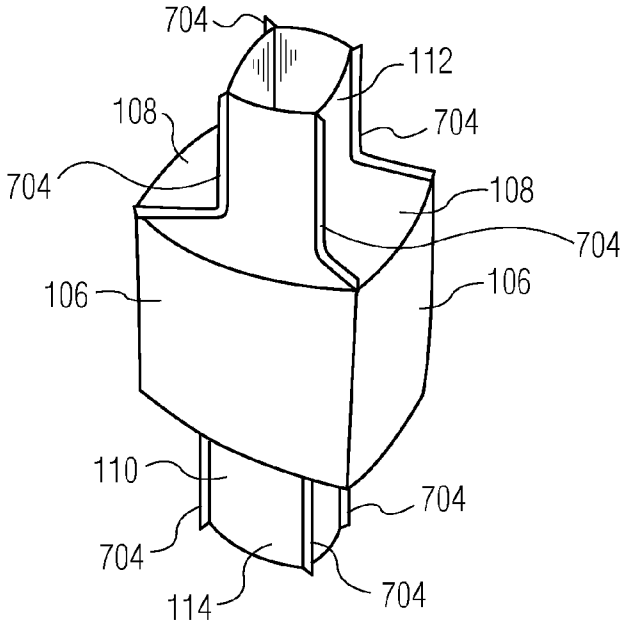

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FIG. 7B

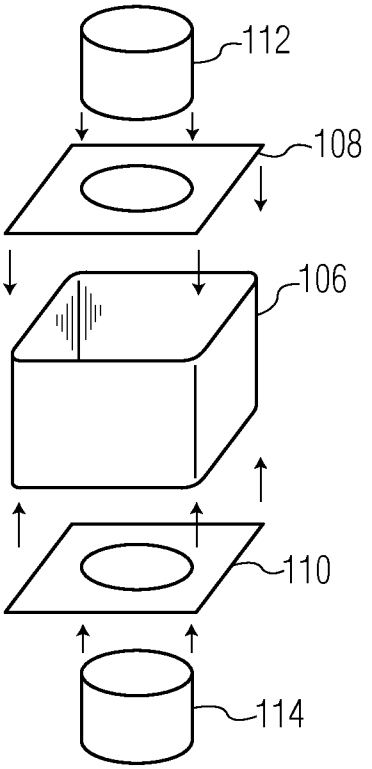


FIG. 8A

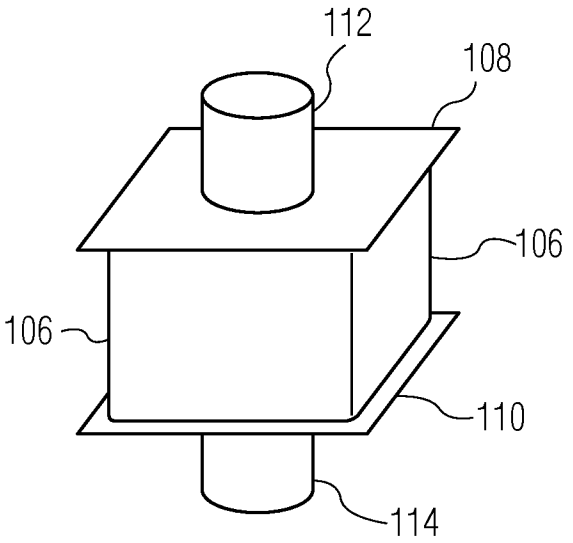


FIG. 8B

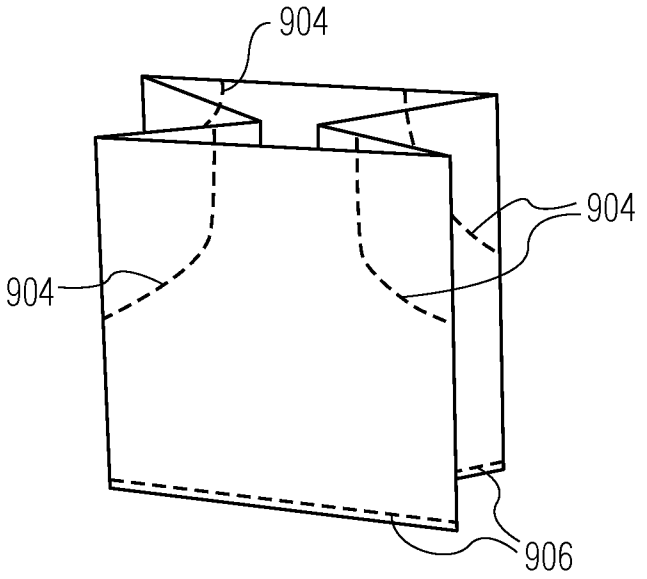


FIG. 9A

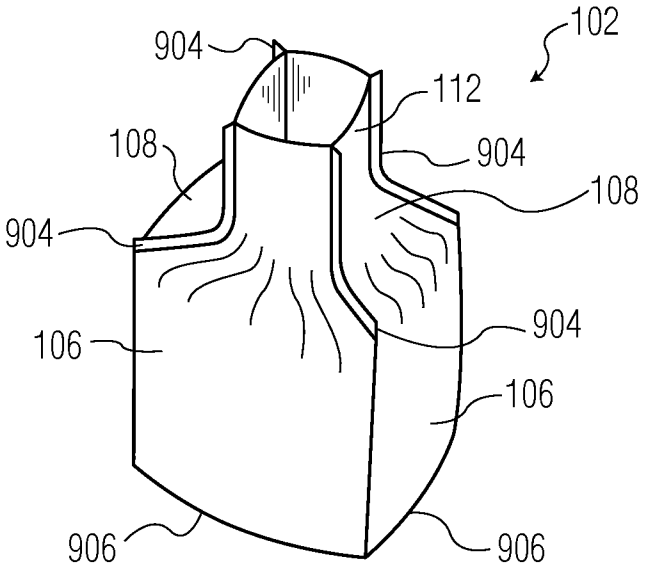


FIG. 9B

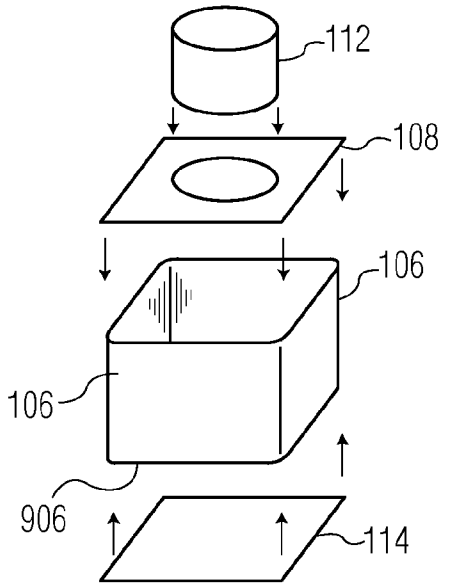


FIG. 10A

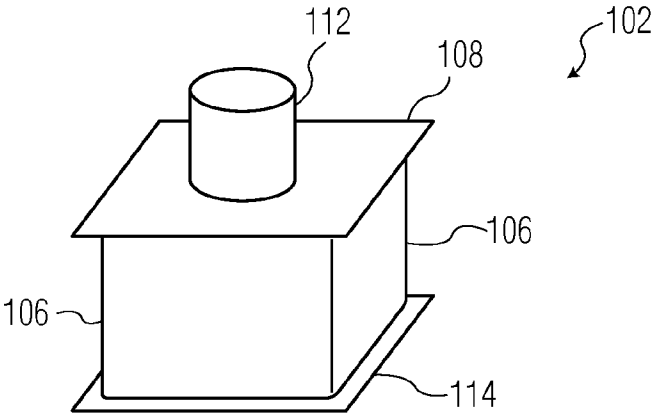


FIG. 10B

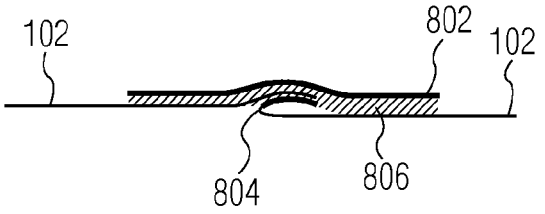


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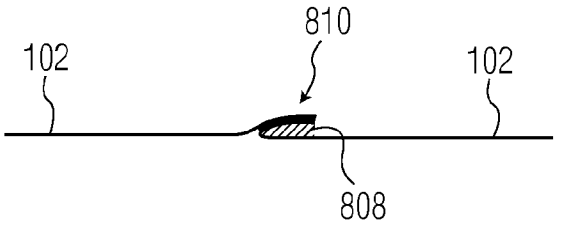


FIG. 12

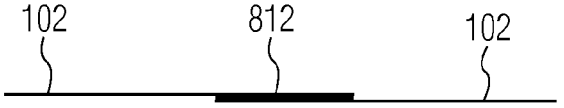


FIG. 13

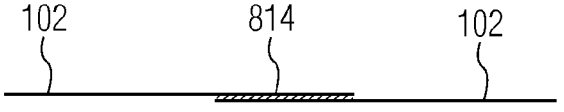


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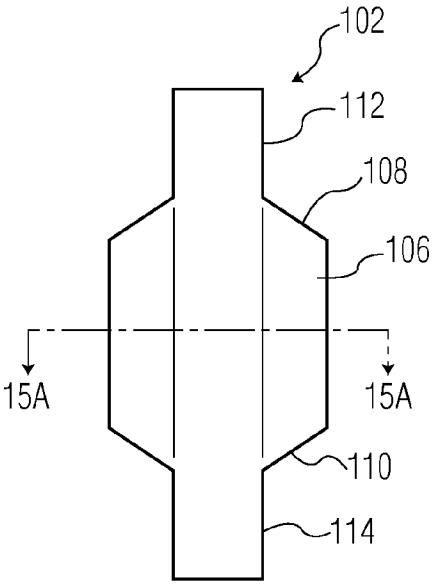


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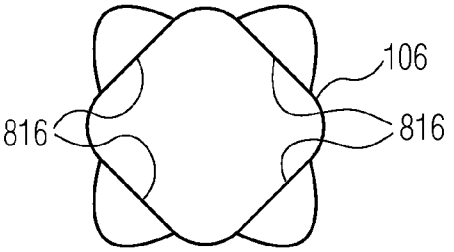


FIG. 15A

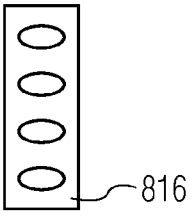


FIG. 15B

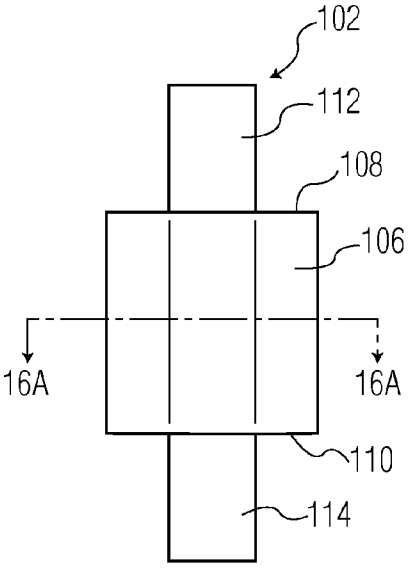


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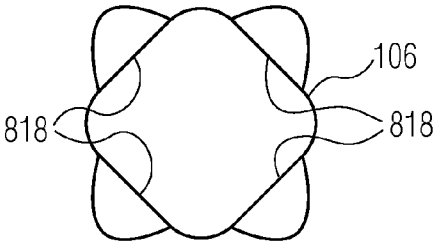


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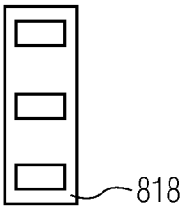


FIG. 16B

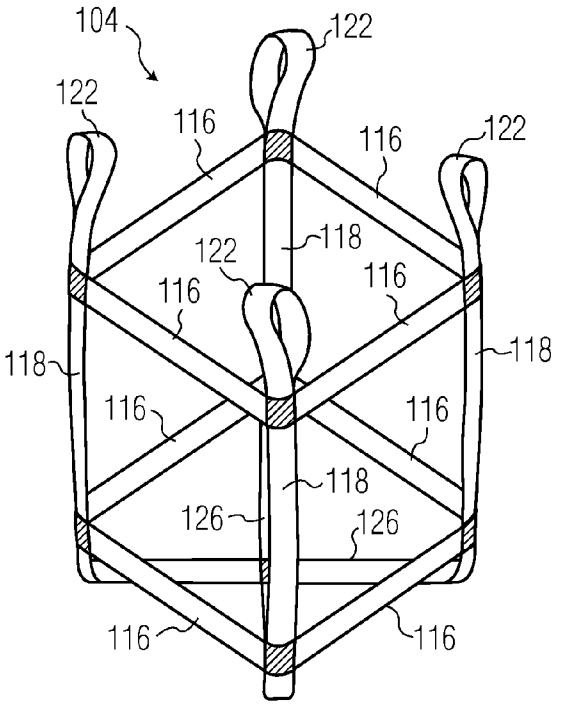

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FIG. 17

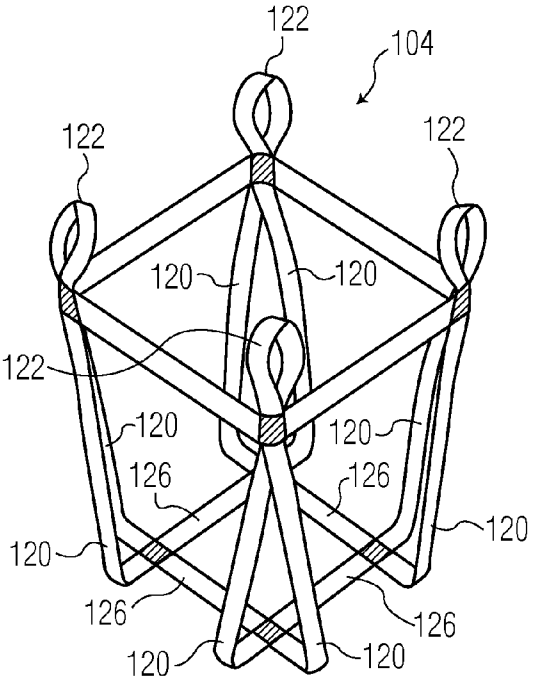

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FIG. 18

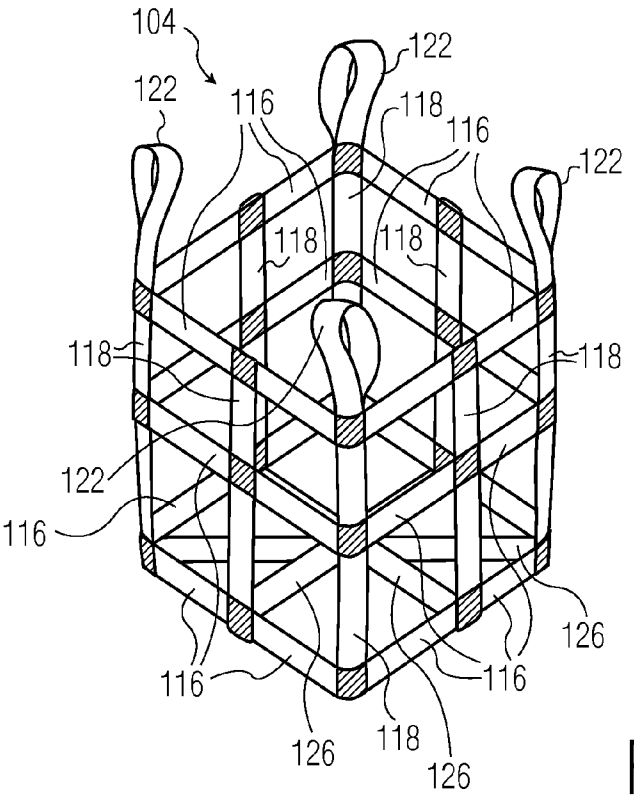

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FIG. 19

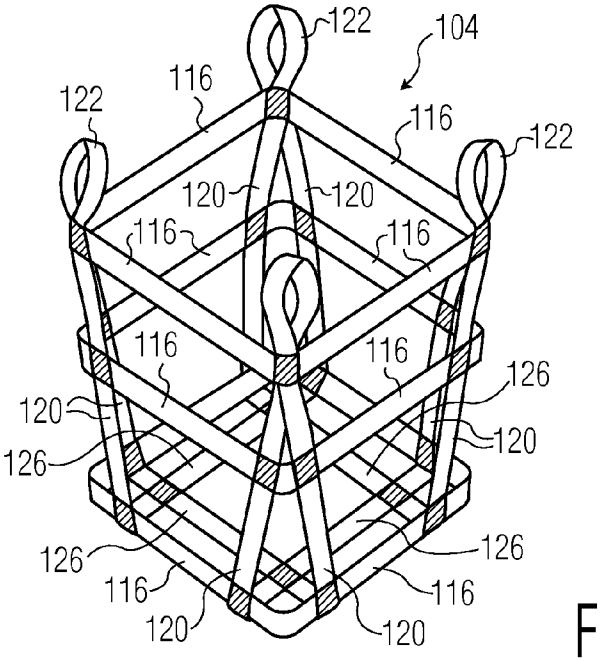

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FIG. 20

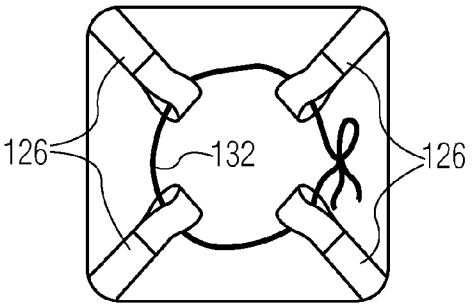


FIG. 21

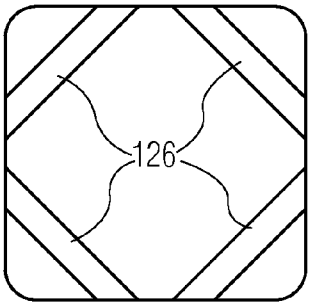


FIG. 22

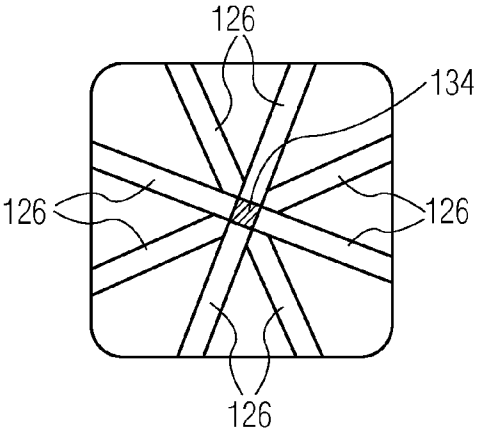


FIG. 23

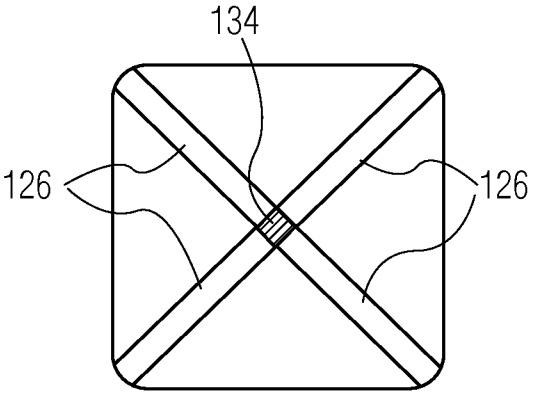


FIG. 24

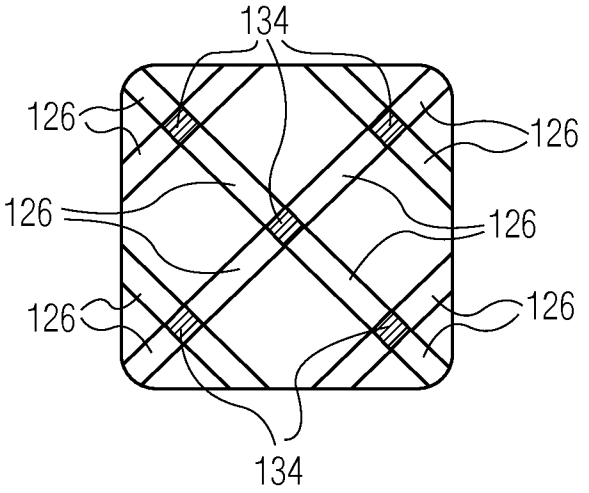


FIG. 25

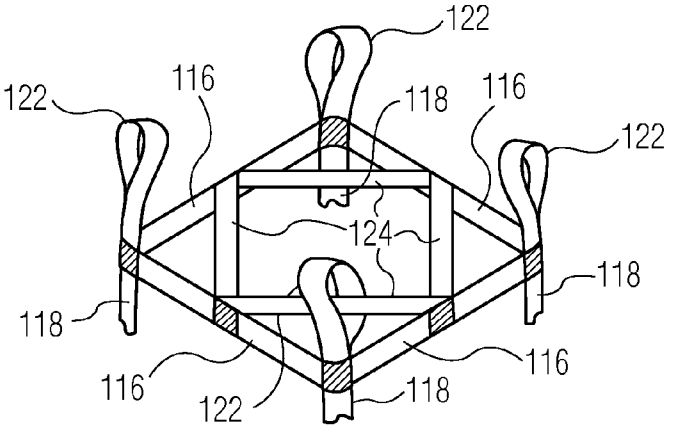


FIG. 26

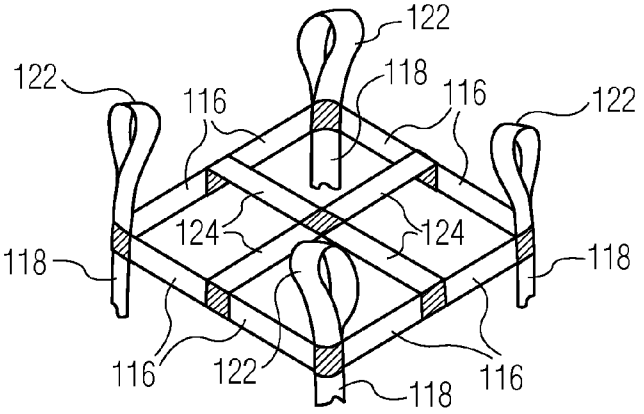


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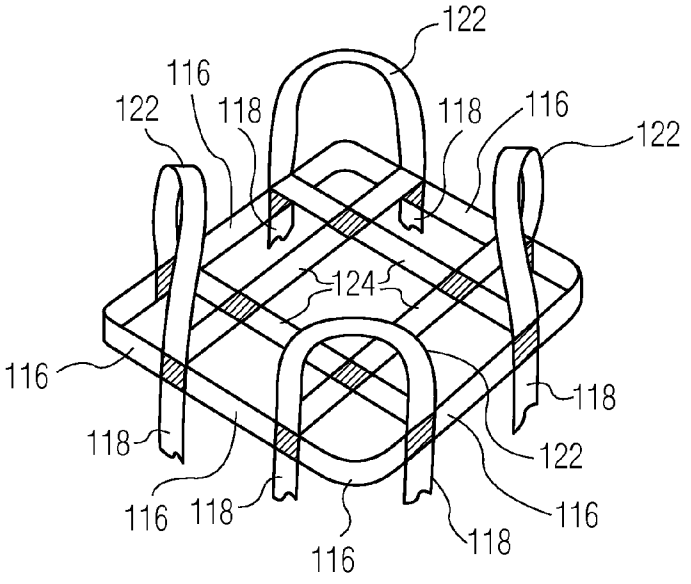


FIG. 28

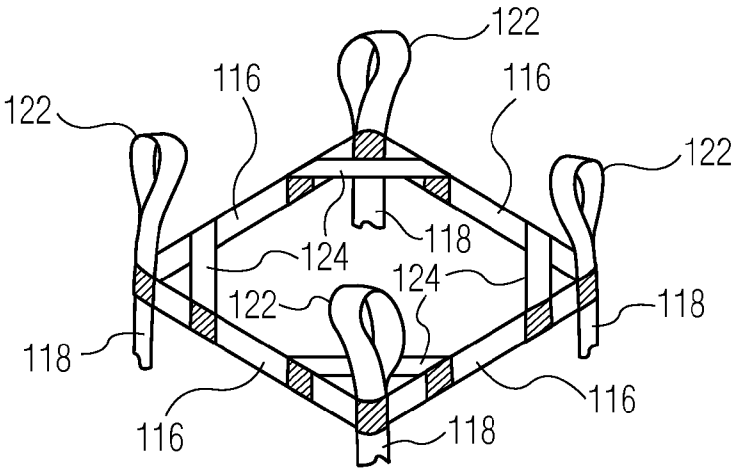

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FIG. 29

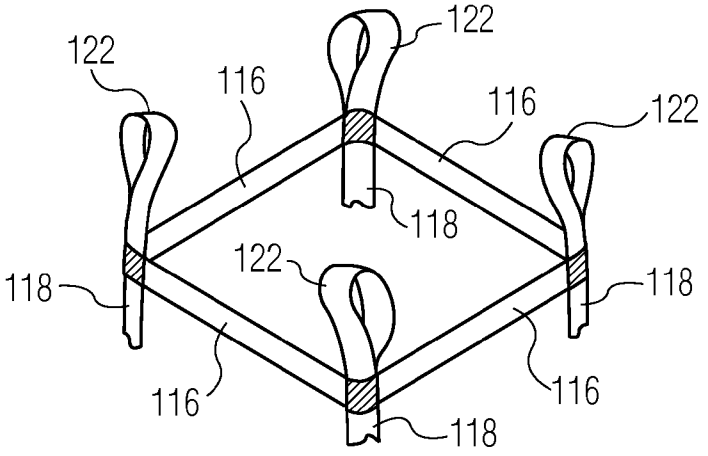

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FIG. 30

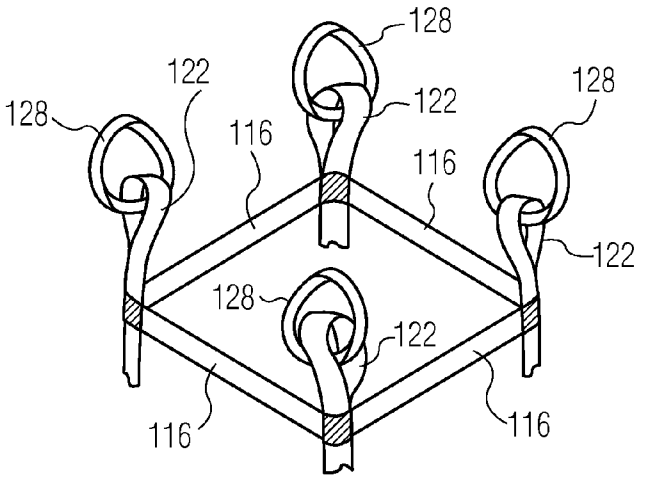


FIG. 31

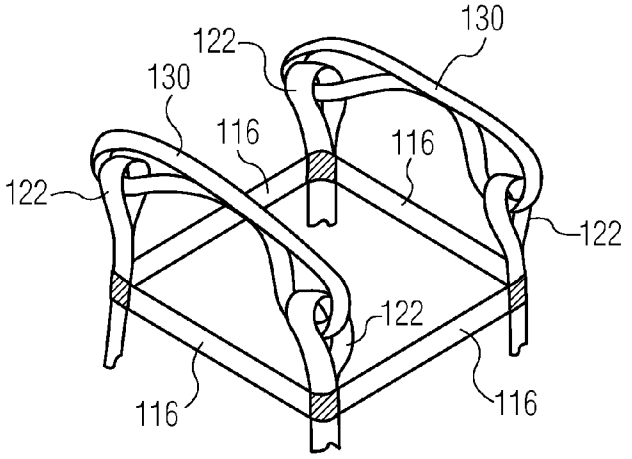


FIG. 32

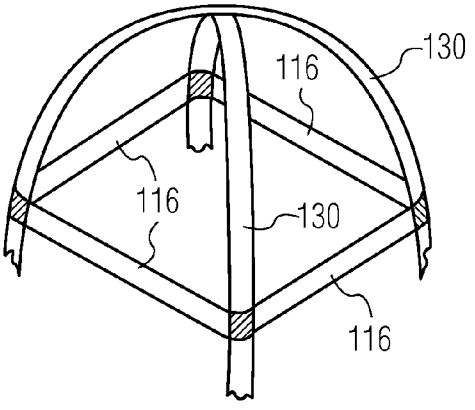


FIG. 33

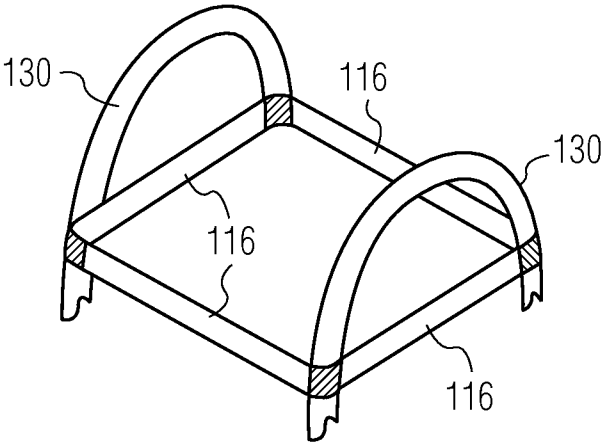


FIG. 34

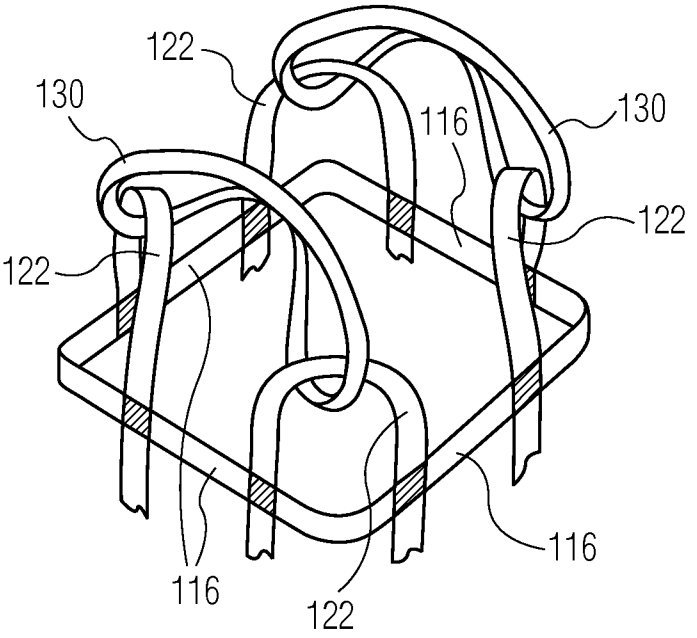


FIG. 35

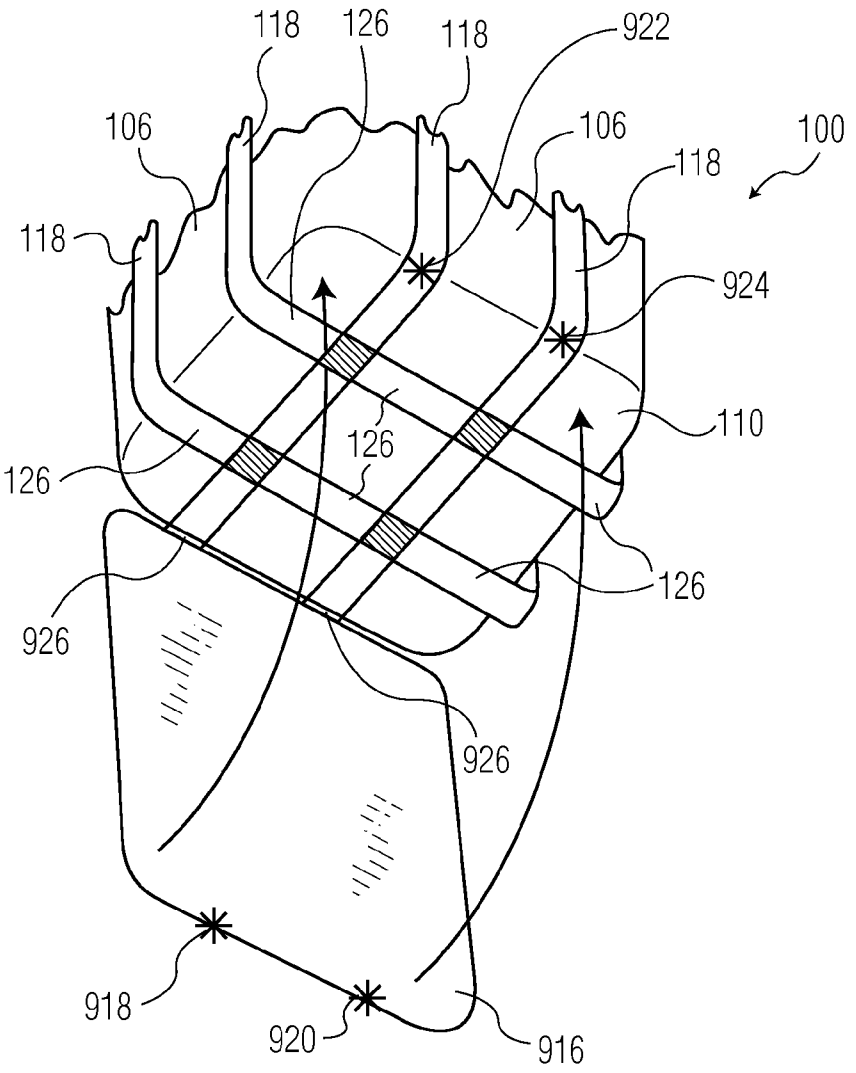

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FIG. 36

BARE LINER BULK BAG

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application is entitled to the benefit of U.S. Provisional Patent Application Ser. No. 61/756,350, filed on Jan. 24, 2013, which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0002] Bulk bags are used for the transportation of bulk materials. Bulk bags are usually fabricated by stitching or sewing pieces of woven fabric. The predominant fabric used to fabricate bulk bags is polypropylene woven fabric due to its high strength. However, the woven fabric used to fabricate the bulk bags does not block the transmission of water, moisture, or gases. Thus, for situations where water, moisture, or gases blockage is needed, or to prevent the leakage of fine powder through the fabric or the sewing seams, liners made of plastic films or aluminum foil film need to be inserted inside the woven fabric shell.

[0003] There are various concerns regarding conventional bulk bags with liners. The liner inside the woven fabric shell of a bulk bag can become tangled and wrinkled to prevent complete emptying of the content of the bulk bag, which not only causes wastes but also creates environmental concerns. The liner can break inside the woven fabric shell and expose the content of the bulk bag to the elements without being detected from the outside. The liner can drop out completely or partially when discharging the content of the bulk bag, which may cause problems to the receiving machinery underneath. Since the woven shell is manufactured by sewing together pieces of cut fabric, debris such as cut sewing thread ends and fabric fraying edges can easily get into the bulk bag and contaminate the content of the bulk bag. In addition, fine powder can leak through the fabric and sewing needle holes and cause waste and environmental pollution.

SUMMARY OF THE INVENTION

[0004] A bare liner bulk bag and method of making the bare liner bulk bag uses a liner that is supported by a lifting system. The liner is configured to have an interior space to hold material. The lifting system includes at least one vertical strap, at least one horizontal strap and at least one bottom strap, which are connected to each other to define a volume into which the liner can be positioned without a woven fabric shell.

[0005] A bare liner bulk bag in accordance with embodiments of the invention comprises a liner configured to have an interior space to hold material and a lifting system configured to support the liner. The lifting system includes at least one vertical strap, at least one horizontal strap and at least one bottom strap, which are connected to each other to define a volume into which the liner can be positioned without a woven fabric shell.

[0006] A method of making a bare bulk bag in accordance with embodiments of the invention comprises forming a liner having an interior space to hold material and forming a lifting system configured to support the liner, including connecting at least one vertical strap, at least one horizontal strap and at least one bottom strap to each other to define a volume. The volume defined by the lifting system is used to place the liner in the lifting system without a woven fabric shell.

[0007] Other aspects and advantages of the present invention will become apparent from the following detailed description, taken in conjunction with the accompanying drawings, illustrated by way of example of the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. **1** is a perspective view of a bare liner bulk bag in accordance with an embodiment of the invention.

[0009] FIG. **2** is a bottom view of the bare liner bulk bag shown in FIG. **1**.

[0010] FIGS. **3-6** illustrate different means to attach a liner of the bare liner bulk bag to a lifting system of the bare liner bulk bag in accordance with embodiments of the invention.

[0011] FIGS. **7***a* and **7***b* illustrate a method of making the liner of the bare liner bulk bag with a bottom spout in accordance with an embodiment of the invention.

[0012] FIGS. **8***a* and **8***b* illustrate another method of making the liner of the bare liner bulk bag with a bottom spout in accordance with an embodiment of the invention.

[0013] FIGS. **9***a* and **9***b* illustrate a method of making the liner of the bare liner bulk bag without a bottom spout in accordance with an embodiment of the invention.

[0014] FIGS. **10***a* and **10***b* illustrate another method of making the liner of the bare liner bulk bag without a bottom spout in accordance with an embodiment of the invention.

[0015] FIGS. **11-14** illustrate different ways to reinforce seals of the liner of the bare liner bulk bag in accordance with embodiments of the invention.

[0016] FIGS. **15** and **16** illustrate baffles that can be used in the liner of the bare liner bulk bag in accordance with embodiments of the invention.

[0017] FIGS. **17-20** illustrate different configurations of the horizontal and vertical straps of the lifting system of the bare liner bulk bag in accordance with embodiments of the invention.

[0018] FIGS. **21-25** illustrate different configurations of the bottom straps of the lifting system of the bare liner bulk bag in accordance with embodiments of the invention.

[0019] FIGS. **26-30** illustrate different configurations of the top straps of the lifting system of the bare liner bulk bag in accordance with embodiments of the invention.

[0020] FIGS. **31-35** illustrate different configurations of the lift straps and/or stevedore straps of the lifting system of the bare liner bulk bag in accordance with embodiments of the invention.

[0021] FIG. **36** is a perspective bottom view of a bare liner bulk bag with a bottom cover in accordance with an embodiment of the invention.

DETAILED DESCRIPTION

[0022] It will be readily understood that the components of the embodiments as generally described herein and illustrated in the appended figures could be arranged and designed in a wide variety of different configurations. Thus, the following more detailed description of various embodiments, as represented in the figures, is not intended to limit the scope of the present disclosure, but is merely representative of various embodiments. While the various aspects of the embodiments are presented in drawings, the drawings are not necessarily drawn to scale unless specifically indicated.

[0023] The present invention may be embodied in other specific forms without departing from its spirit or essential

characteristics. The described embodiments are to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the appended claims rather than by this detailed description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

[0024] Reference throughout this specification to features, advantages, or similar language does not imply that all of the features and advantages that may be realized with the present invention should be or are in any single embodiment of the invention. Rather, language referring to the features and advantages is understood to mean that a specific feature, advantage, or characteristic described in connection with an embodiment is included in at least one embodiment of the present invention. Thus, discussions of the features and advantages, and similar language, throughout this specification may, but do not necessarily, refer to the same embodiment.

[0025] Furthermore, the described features, advantages, and characteristics of the invention may be combined in any suitable manner in one or more embodiments. One skilled in the relevant art will recognize, in light of the description herein, that the invention can be practiced without one or more of the specific features or advantages of a particular embodiment. In other instances, additional features and advantages may be recognized in certain embodiments that may not be present in all embodiments of the invention.

[0026] Reference throughout this specification to "one embodiment," "an embodiment," or similar language means that a particular feature, structure, or characteristic described in connection with the indicated embodiment is included in at least one embodiment of the present invention. Thus, the phrases "in one embodiment," "in an embodiment," and similar language throughout this specification may, but do not necessarily, all refer to the same embodiment.

[0027] With reference to FIGS. **1** and **2**, a bare liner bulk bag **100** in accordance with an embodiment of the invention is described. As illustrated in FIGS. **1** and **2**, the bare liner bulk bag **100** includes a liner **102** and a lift system **104**. However, unlike conventional bulk bags with liners, the bare liner bulk bag **100** does not include a woven fabric shell. In a conventional bulk bag with a liner, the liner is inserted into a woven fabric shell, which serves as the body or shell of the bulk bag. Since the bare liner bulk bag **100** does not use a woven fabric shell, the bare liner bulk bag does not suffer from the high cost of a woven fabric shell and eliminates the presence of debris associated from the woven fabric shell, such as debris from sewing of fabric to make the woven fabric shell and from fabric edges of the woven fabric shell. When compared to conventional bulk bags with liners, the bare liner bulk bag **100** is easier to make, offers higher productivity, and has lower manufacturing cost. The bare liner bulk **100** also requires less material to manufacture, which means less material into the environment after the useful life of the bulk bag. In addition, the liner **102** of the bare line bulk bag **100** does not wrinkle as much as a woven fabric shell so material in the liner can be almost completely emptied. Furthermore, any breakage of the liner **100** can be readily observed from outside since the liner is not situated in an opaque woven fabric shell, which prevents costly damage to the material in the liner over time.

[0028] The liner **102** of the bare liner bulk bag **100** is composed of side portion **106**, a top portion **108**, a bottom portion **110**, a top spout **112** and a bottom spout **114** (shown in FIG. **2**). The liner portions are attached to each other in a sealed manner so that the liner has an interior space to hold material. The liner **102** should have no needle holes or stitching so as to provide good sealing performance except on the edges or ends where the needle holes do not break the tightness of the liner in terms of the material inside.

[0029] The liner **102** is used for the filling, holding and discharging of material. The top spout **112** and the bottom spout **114** can be tied shut with tie cords or other means. The top spout **112** is used for filling material into to the bare liner bulk bag **100** and the bottom spout **114** is used for discharging of the material from the bare liner bulk bag. The bottom spout **114** needs be closed, e.g., tied shut, before filling material into the liner **102**. The liner **102** provides water, moisture and gas blockage to protect the material inside.

[0030] The lifting system **104** of the bare line bulk bag **100** is designed to support the liner **102** without any woven fabric shell. The lifting system **104** is composed of horizontal straps **116**, vertical straps **118**, which may include angled vertical straps **120** (shown in FIGS. **18** and **20**), lift straps **122**, top straps **124** and bottom straps **126** (shown in FIG. **2**). The lifting system **104** can also have lift loops **128** (shown in FIG. **31**), stevedore straps **130** (shown in FIGS. **32-35**) and a rope **132** (shown in FIG. **21**). The horizontal straps **116**, the vertical strap **118** and the angled vertical straps **120** are connected at their overlapping regions **134** by sewing, gluing, tying or other suitable means to produce strong connections. The various components of the lifting system **104** define a volume into which the liner **102** can be placed. When the liner **102** is fitted into the lifting system **104**, the liner and the lifting system can be free moving with respect to each other, or they can be connected to each other by suitable means at one or more places where the liner and the lifting system meet to secure the liner to the lifting system. As an example, the liner **102** and the lifting system **104** can be connected to each other by Velcro **302**, as illustrated in FIG. **3**. As another example, the liner **102** and the lifting system **104** can be connected to each other by glue **402**, as illustrated in FIG. **4**. As another example, the liner **102** and the lifting system **104** can be connected to each other by a number of channels, which are formed by attaching strips of fabric **502** on the liner, as illustrated in FIG. **5**. As another example, the liner **102** and the lifting system **104** can be connected to each other by a number of ties **602** that are attached to the liner, as illustrated in FIG. **6**.

[0031] The lift straps **122**, the lift loops **128** and/or the stevedore straps **130** of the lifting system **104** are used for lifting up the bare liner bulk bag **100**. The lifting system **104** is designed to hold the weight of the load and protect the liner **102** from excessive stress. The various components of the lifting system **104** can be made of polypropylene, nylon, polyester, or other suitable material of significant strength to lift the bag.

[0032] The liner **102** of the bare liner bulk bag **100** is made from tubular or flat pieces of flexible plastic, aluminum foil or other film. FIGS. **7***a* and **7***b* illustrate one method to make the liner **100** using seal lines in accordance with an embodiment of the invention. If the liner material is a flat piece, it needs to be heat sealed or glued to form a tubular shape either before or after the next heat seal or glue step. The heat seal or glue step seals the liner material along the dotted lines **704**. The liner material outside of the sealed lines (at the corners) is then trimmed off. The resulting liner, when blown up or extended to a three dimensional shape, will have the appearance shown in FIG. **7***b*.

[0033] FIGS. **8***a* and **8***b* illustrate another method of making the liner **102** in accordance with an embodiment of the invention. In this method, the side portion **106**, the top portion **108**, the bottom portion **110**, the top spout **112** and the bottom spout **114** of the liner **102** are preformed, as shown in FIG. **8***a*. These liner components are then heat sealed or glued together, as shown in FIGS. **8***a* and **8***b*.

[0034] In these methods of making the liner, one or more of the liner pieces shown in FIGS. **7***a*, **7***b*, **8***a* and **8***b* can be made of multiple pieces of liner material attached together in water tight manner. It is noted here that the operation of heat seal or glue on the top four corners of the liner being formed shown in FIGS. **7***a* and **7***b* can be omitted so as to form a top opening having the same size as the side portion. The height of the liner **102** can be made high enough so that it can be tied shut after filling the bare liner bulk bag **100** with the desired material. Alternatively, the height of the liner **102** can be similar to the height of the side portion so that the top of the liner is wide open after filling the bare liner bulk bag with the desired material. Similarly, in the method illustrated in FIGS. **8***a* and **8***b*, the top portion **108** and the top sprout **112** of the liner **102** can be omitted. In addition, the side portion **106** of the liner **102** can be extended vertically so that it can be tied shut after filling the bare liner bulk bag **100** with the desired material or the side portion can remain wide open on top.

[0035] The liner **102** can be mono-layered (i.e., made of single layer of material) or multiple layered (i.e., made of multiple layers of material) to achieve the required strength and blockage. If made of multiple liner layers, the layers can be free moving between each other or connected to each other by suitable means, such as glue or heat seal, completely between the liner layers or at selected spots between the liner layers. A multilayer film from co-extrusion can also be used as the liner material.

[0036] In some embodiments, the liner **102** may not have a bottom opening. If the liner **102** has the bottom spout **114**, the bottom end of the bottom spout of the liner can be closed by heat seal or glue. In other embodiments, the liner **102** may not even have the bottom spout. FIGS. **9***a* and **9***b* illustrate one method to make the liner without the bottom spout in accordance with an embodiment of the invention. Similar to the method illustrated in FIGS. **7***a* and **7***b*, the liner material is heat sealed or glued along the dotted lines **904**. However, in the embodiment illustrated in FIGS. **9***a* and **9***b*, the liner material is further heat sealed or glued along the bottom line **906** so that the bottom of the liner **102** is closed. In an embodiment, an extra piece of liner material (not shown) may be used to form the bottom of the liner. The liner material outside of the sealed lines **904** (at the top corners) is then trimmed off. The resulting liner, when blown up or extended to a three dimensional shape, will have the appearance shown in FIG. **9***b*.

[0037] FIGS. **10***a* and **10***b* illustrate another method of making the liner without the bottom spout in accordance with an embodiment of the invention. In this method, the side portion **102**, the top portion **108**, the bottom portion **110** and the top spout **112** of the liner **102** are preformed, as shown in FIG. **10***a*. In this embodiment, the bottom portion **110** of the liner **102** does not have any opening. These liner components are then heat sealed or glued together, as shown in FIGS. **10***a* and **10***b*.

[0038] In some embodiments, the heat or glue seal lines of the liner **102** can be reinforced. As an example, a liner patch **802** can be used to cover a heat seal line or a glue seal line **804** on the liner **102** using glue **806**, as shown in FIG. **11**. This type of liner patches can be used to cover separate spots on the heat seal lines or the glue seal lines of the liner **102** or can be used to cover all of the heat or glue seal lines. As another example, glue **808** can be used to glue down an edge or fin **810**, which is formed as a result of a heat seal or gluing of liner components, flat onto the liner **102**, as shown in FIG. **12**. As another example, an overlapped heat seal **812** can be used to further attached liner materials along a heat seal line or a glue seal line, as shown in FIG. **13**. As another example, an overlapped gluing **814** can be used to further attached liner materials along a heat seal line or a glue line, as shown in FIG. **14**.

[0039] In an embodiment, to maintain the cubic shape of the liner **102**, baffles **816** or **818** can be used inside the liner, as shown in FIGS. **15**, **15***a*, **16** and **16***a*. The baffles **816** and **818** include holes to facilitates flow of material to and from the corners of the liner **102** during filling and discharging respectively. The side view of the baffles **816** and **818** are shown in FIGS. **15***a* and **16***b*, respectively. The baffles **816** and **818** can be made of the same material as the liner, or another material such as polyethylene, nylon, woven polypropylene, or a combination of these materials, that can be heat seal connected with the liner.

[0040] Turning now to FIGS. **17-20**, variations of the lifting system **104** of the bare liner bulk bag **100** in accordance with embodiments of the invention are illustrated. As shown in these figures, the lifting system **104** may have one, two or multiple horizontal straps **116**. The position of the horizontal straps **116** can be at the top, the bottom or anywhere in between on the bulk bag. Similar to the horizontal straps **116**, the lifting system **104** may have one, two or multiple vertical straps **118** on each side of the bulk bag. The position of the vertical straps **118** can be at the corners of the bulk bag or anywhere else on the side of the bulk bag.

[0041] As shown in FIGS. **18** and **20**, the lifting system **104** may have angled vertical straps **120**. There can be one, two or more angled vertical straps **120** on each side of the bulk bag. The angled vertical straps **120** can extend from the top corners of the bulk bag, or a distance from the top corner, of the bulk bag inwards to the middle part of the bag side at the bottom, as illustrated in FIGS. **18** and **20**. Alternatively, the angled vertical straps **120** may extend from the middle part of the bag side at the top of the bag outward to the corners, or a distance from the corners, of the bag side at the bottom of the bag.

[0042] Turning now to FIGS. **21-25**, variations of the bottom straps **126** of the lifting system **104** in accordance with embodiments of the invention are illustrated. In FIG. **21**, the ends of the bottom straps **126** are made into loops, which can be connected together using a rope tie **132** or other means of connection. In FIG. **22**, each bottom strap **126** extends across a bottom corner of the bulk bag from one side of the bulk bag to an adjacent side of the bulk bag. In FIG. **23**, each bottom strap **126** extends from one side of the bulk bag to the opposite side of the bulk bag such that all the bottom straps overlap at a common overlapping region **134**. In FIG. **24**, each bottom strap **126** extends from one bottom corner to the opposite bottom corner such that all the bottom straps overlap at a common overlapping region **134**. In FIG. **25**, the bottom straps **126** extend across bottom corners of the bulk bag from one side of the bulk bag to an adjacent side of the bulk bag, similar to the bottom straps shown in FIG. **22**. However, in FIG. **25**, there are additional bottom straps **126** that form a cross and intersect the bottom straps that extend across the bottom corners.

[0043] Turning now to FIGS. **26-30**, variations of the top straps **124** of the lifting system **104** in accordance with embodiments of the invention are illustrated. The presence of the top straps **124** can hold the top of the bulk bag at a relatively rectangular shape, or any other required shape, which may be achieved by adjusting the length of each leg of the top straps. In FIG. **26**, the top straps **124** are connected to the top horizontal strap **116** to form a diamond. In FIG. **27**, the top straps **124** are connected to the top horizontal strap **116** to form a cross. In FIG. **28**, the top straps **124** are connected to the top horizontal strap **116** and the vertical straps **118** to form a number sign. In FIG. **29**, the top straps **124** are connected to the top horizontal strap **116** and extend across the top corners of the bulk bag. In FIG. **30**, there are no top straps used.

[0044] Although a number of variations of the horizontal straps **116**, the vertical straps **118**, the angled vertical straps **120** and the top straps **124** of the lifting system **104** have been illustrated and described, there are other variations of these straps with respect to the number of straps and the configuration of the straps that can be used in the lifting system as long as they provide a secure support for the liner **102**.

[0045] Turning now to FIGS. **31-35**, variations of components of the lifting system **104** used for lifting the bare liner bulk bag **100** in accordance with embodiments of the invention are illustrated. In FIG. **31**, the lift loops **128** are used with the lift straps **122**. In FIG. **32**, the stevedore straps **130** are used with the lift straps **122**, which are attached at the top corners of the bulk bag. In FIG. **33**, the stevedore straps **130** are used without the lift straps **122** such that the stevedore straps crisscross at the top corners of the bulk bag. In FIG. **34**, the stevedore straps **130** are also used without the lift straps such that the stevedore straps do not crisscross at the top corners of the bulk bag. In FIG. **35**, the stevedore straps **130** are used with the lift straps **122** but the lift straps are not attached at the top corners of the bulk bag.

[0046] In an embodiment, the bare liner bulk bag **100** may further include a bottom cover **816**, as illustrated in FIG. **36**. The bottom cover **816** can be connected to the bottom of the bulk bag **100** at various locations, such as locations **818**, **820**, **822**, **824**, **826** and **828**, by tying, Velcro or other means to protect the bottom of the liner **102** from damage by a pallet or other objects. The bottom cover **816** can be easily released before discharging material from the bulk bag.

[0047] The bare liner bulk bag **100** can be used in the following manner in accordance with an embodiment of the invention. The bare liner bulk bag **100** is first hung on a suitable structure using the four corner lift straps **122**, the lift loops **128** or the stevedore straps **130**. The bottom spout **114**, if any, should be tied shut or otherwise be closed. The top spout **112**, if any, is then connected to the filling nozzle of a filling machine. Before filling the bare liner bulk bag **100**, the bulk bag should be inspected to make sure that the bag is properly expanded and straightened vertically. The bare liner bulk bag **100** is then filled with the required amount of material. The top spout **112** is then tied off or otherwise closed. The bare liner bulk bag **100** is then lifted using only the designated devices, such as the lift straps **122**, the lift loops **128** or the stevedore straps **130**. The bare liner bulk bag **100** should be lifted vertically, and avoid pulling on the straps in a sideway direction. To discharge, the bottom spout of the bare liner bulk bag **100** is untied and the flat bottom of the liner is pinched open.

[0048] Although specific embodiments of the invention have been described and illustrated, the invention is not to be limited to the specific forms or arrangements of parts so described and illustrated. The scope of the invention is to be defined by the claims appended hereto and their equivalents.

What is claimed is:

1. A bare liner bulk bag comprising:

a liner configured to have an interior space to hold material; and

a lifting system configured to support the liner, the lifting system comprising:

at least one vertical strap;

at least one horizontal strap; and

at least one bottom strap,

wherein the at least one vertical strap, the at least one horizontal strap and the at least one bottom strap are connected to each other to define a volume into which the liner can be positioned without a woven fabric shell.

2. The bare liner bulk bag of claim **1** wherein the liner is coupled to the lifting system at one or more locations on the lifting system to secure the liner to the lifting system.

3. The bare liner bulk bag of claim **1** wherein the liner is made of multiple pieces of liner material, the multiple pieces of liner material being attached to each other via seal lines.

4. The bare liner bulk bag of claim **3** wherein the seal lines of the liner are glue seal lines or heat seal lines.

5. The bare liner bulk bag **1** wherein the liner includes a top spout that is used to fill the liner with the material.

6. The bare liner bulk bag of claim **5** wherein the liner includes a bottom spout that is used to empty the liner of the material.

7. The bare liner bulk bag of claim **1** wherein the liner is made of pieces of flexible film that are attached to each other.

8. The bare liner bulk bag of claim **1** wherein the at least one vertical strap includes at least one angled vertical strap.

9. The bare liner bulk bag of claim **1** wherein the lifting system further includes lift straps that are attached to the at least one vertical strap.

10. The bare liner bulk bag of claim **9** further comprising a lift loop connected to each of the lift straps.

11. The bare liner bulk bag of claim **9** further comprising at least one stevedore strap connected to the lift straps.

12. The bare liner bulk bag of claim **1** wherein the lifting system further includes at least one stevedore strap attached to the at least one vertical strap.

13. A method of making a bare liner bulk bag, the method comprising:

forming a liner having an interior space to hold material; and

forming a lifting system configured to support the liner, including connecting at least one vertical strap, at least one horizontal strap and at least one bottom strap to each other to define a volume,

wherein the volume defined by the lifting system is used to place the liner in the lifting system without a woven fabric shell.

14. The method of claim **13** wherein the forming the liner includes coupling the liner to the lifting system at one or more locations on the lifting system to secure the liner to the lifting system.

15. The method of claim **13** wherein the forming the liner includes attaching multiple pieces of liner material to each other using a sealing process.

16. The method of claim **15** wherein the attaching the multiple pieces of liner material to each other includes glue sealing or heat sealing the multiple pieces of liner material to each other to form the liner.

17. The method of claim **13** wherein the forming the liner includes forming a top spout that is used to fill the liner with the material or a bottom spout that is used to empty the liner of the material.

18. The method of claim **13** wherein the at least one vertical strap includes at least one angled vertical strap.

19. The method of claim **13** wherein the lifting system further includes lift straps that are attached to the at least one vertical strap.

20. The method of claim **13** wherein the lifting system further includes at least one stevedore strap attached to the at least one vertical strap.

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