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(54) **SEALABLE BAG**

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(57) **ABSTRACT**

A sealable plastic bag has a first panel and a second panel. The first panel and second panel are joined along three edges to define a bag interior and an opening to permit access to the bag interior. A permanent sealing structure is configured to permanently seal the first and second panels to close the opening and prevent access to the bag interior. A release liner strip overlies the permanent sealing structure to prevent the permanent sealing structure from sealing the first and second panels until activation by a user. A resealable sealing structure is configured to repeatedly and nondestructively seal the first and second panels to close the opening and prevent access to the bag interior.

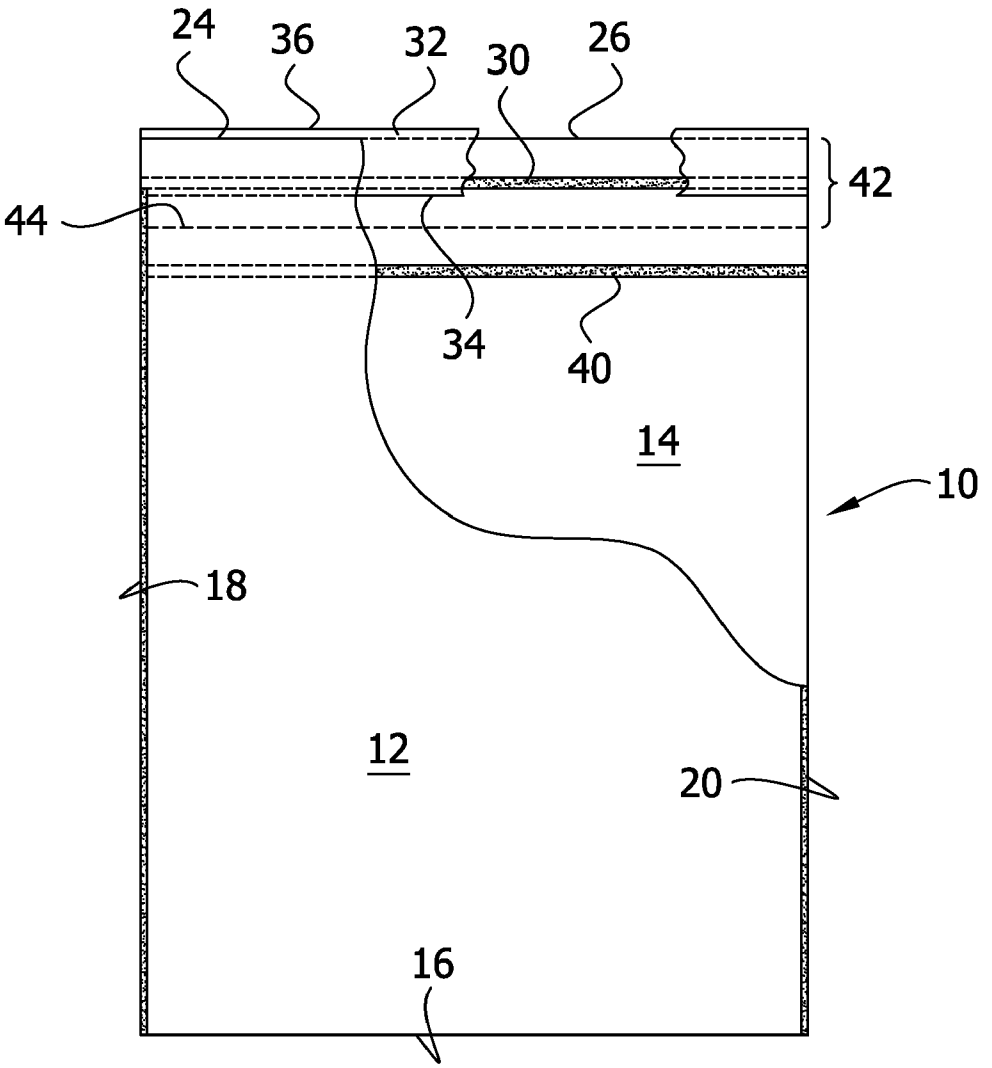


FIG. 1

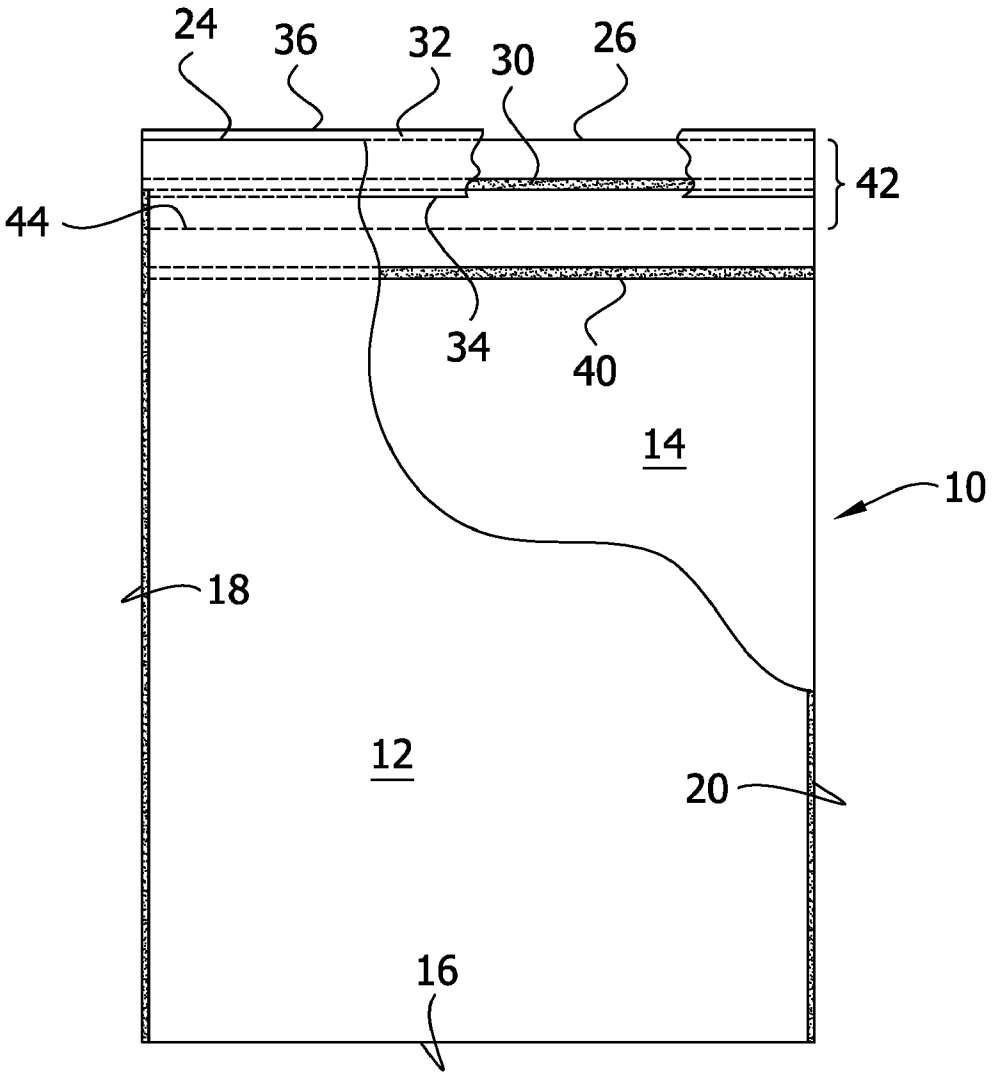


FIG. 2

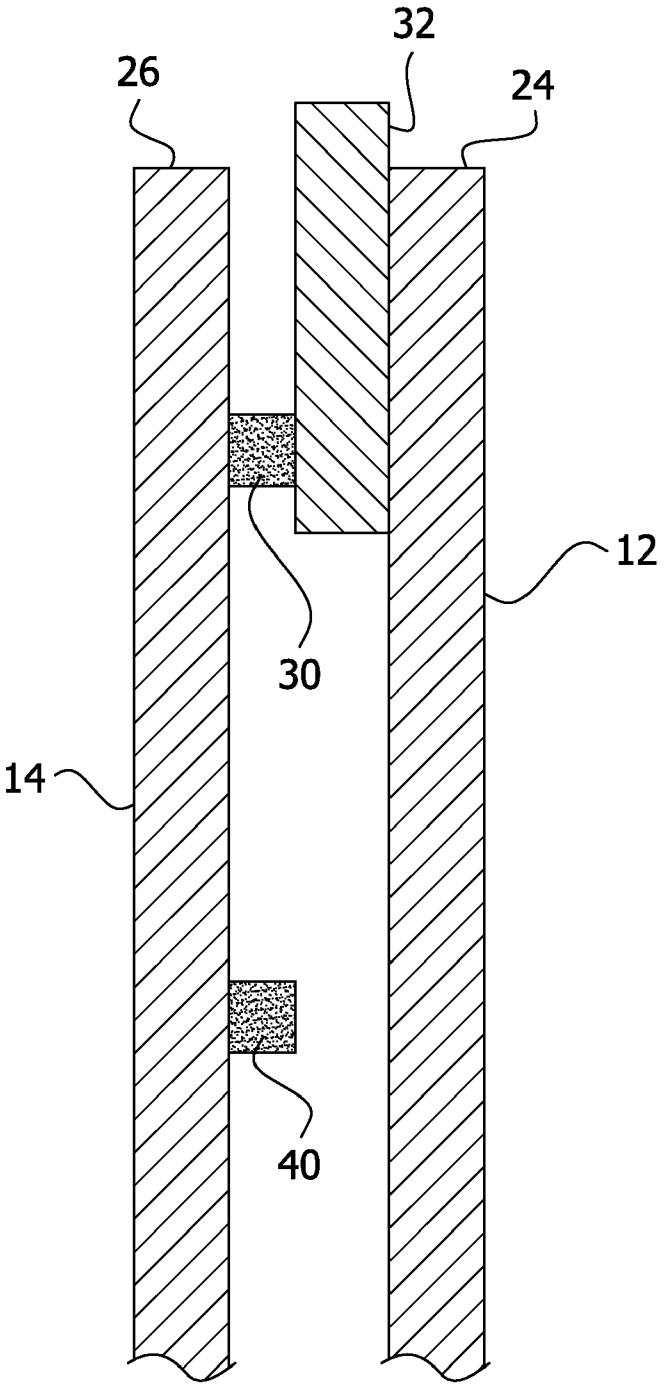
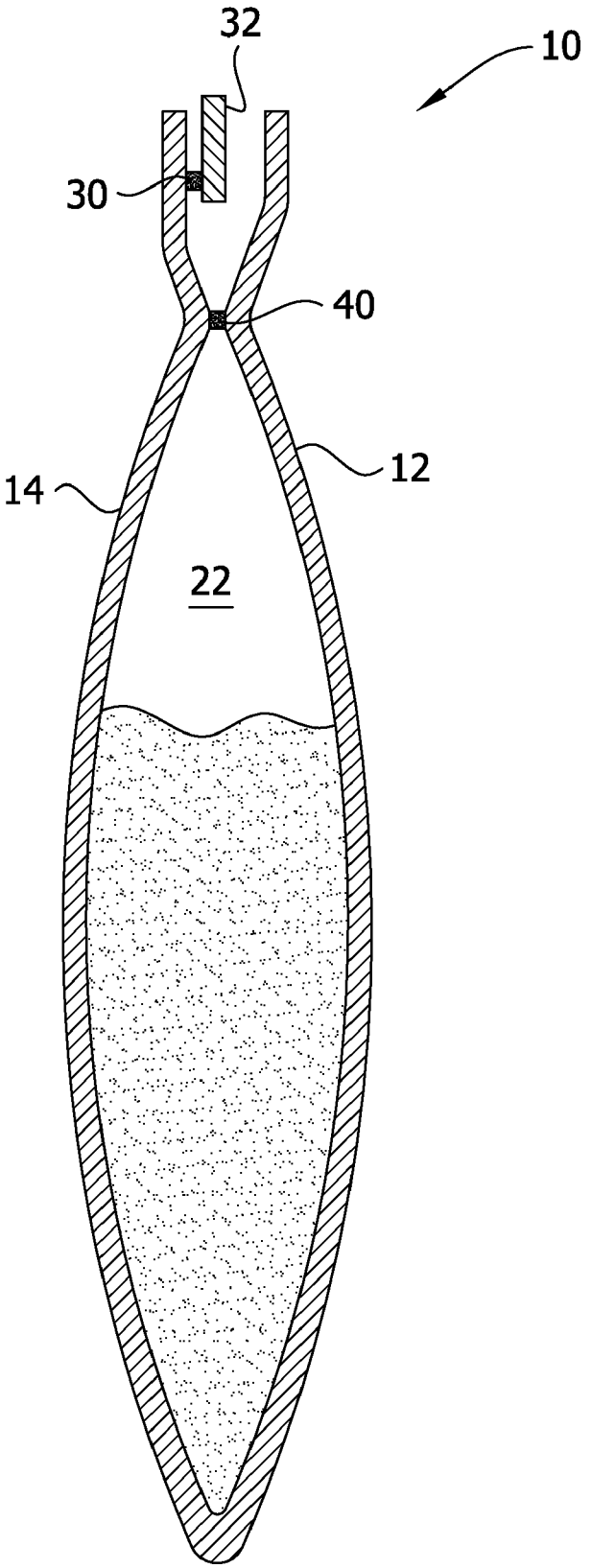


FIG. 3



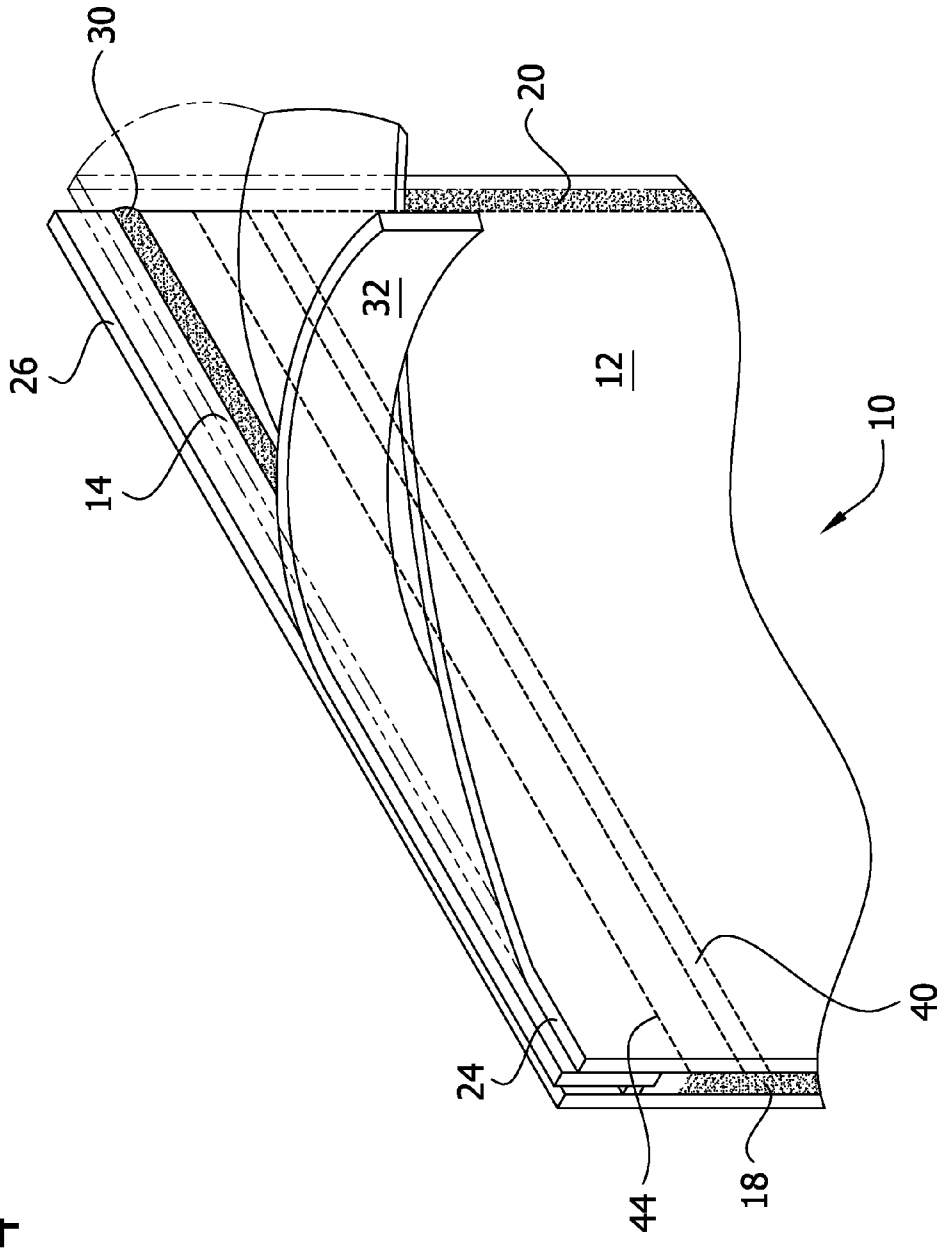


FIG. 4

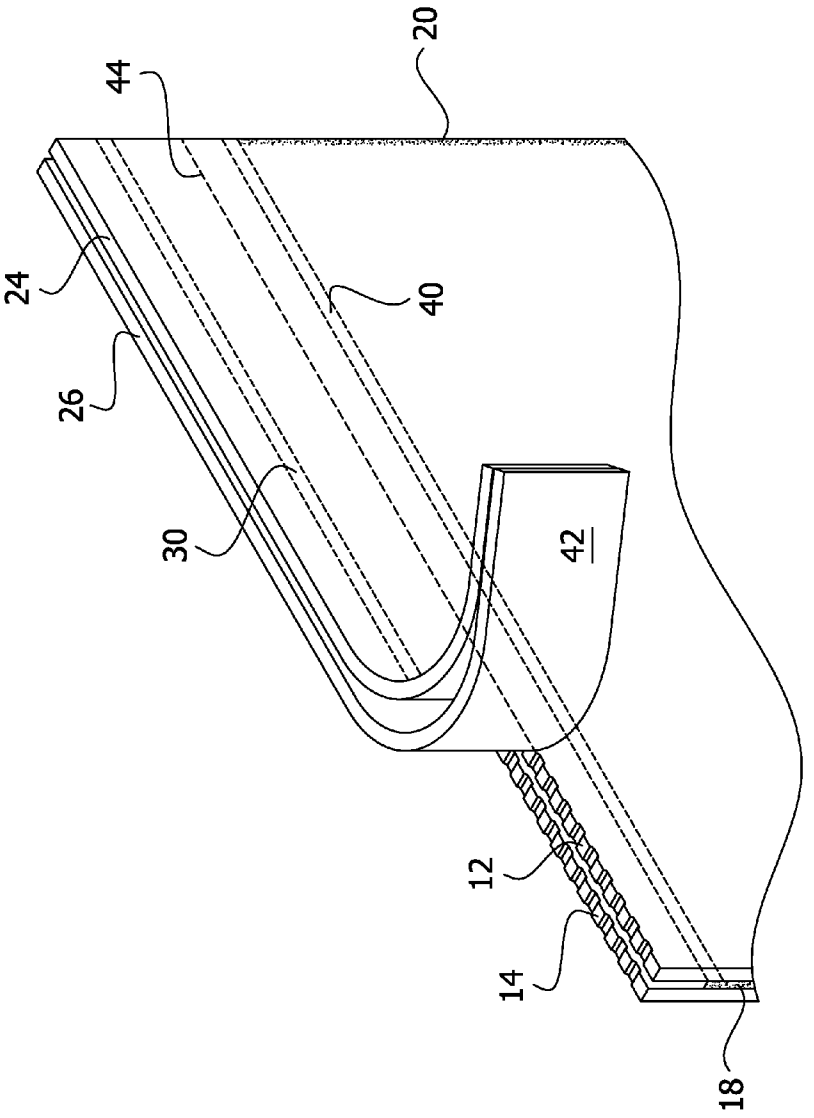


FIG. 5

SEALABLE BAG

FIELD OF THE INVENTION

[0001] The present invention generally relates to sealable bags, and more specifically, a plastic bag that includes both permanent and temporary sealing structures.

BACKGROUND OF THE INVENTION

[0002] Sealable bags are used for many different applications, such as shipping, food packaging, biohazard disposal, etc. Sealable bags generally include a permanent or a temporary sealing structure, depending on the application. Some sealable bags include a peelable seal, or a permanent seal that must be unsealed before the bag can be used. Other sealable bags include a permanent seal or fusion seal that must be removed from the bag to permit access to the interior of the bag. However, an initially sealed bag may not be preferable, because repeated use of the bag before permanent sealing may be desired.

SUMMARY OF THE INVENTION

[0003] In one aspect of the present invention, a plastic bag generally comprises a first panel having four edges, and a second panel having four edges. The first panel and second panel define a bag interior and an opening to permit access to the bag interior. A permanent sealing structure is configured to permanently seal the first and second panels to close the opening and prevent access to the bag interior such that the bag cannot be re-opened without destruction of the bag. A release liner strip overlies the permanent sealing structure to prevent the permanent sealing structure from sealing the first and second panels until activation by a user. A resealable sealing structure is configured to repeatedly and nondestructively seal and unseal the first and second panels to close the opening and prevent access to the bag interior.

[0004] In another aspect of the present invention, a plastic bag generally comprises a first panel having a bottom edge, first and second side edges, and a top edge, and a second panel having a bottom edge, first and second side edges, and a top edge. The first and second panels are joined at the respective bottom edges and first and second side edges to define a bag interior and an opening between the respective top edges permitting access to the bag interior. A permanent adhesive layer extending continuously between the first and second side edges of at least one of the panels is configured to permanently seal the top edges of the first and second panels together to prevent access to the bag interior. A first release liner strip extends continuously between the first and second side edges of one of the panels and overlies the permanent adhesive layer, such that the permanent adhesive layer cannot seal the top edges of the first and second panels until the first release liner strip is removed. A resealable sealing structure extends continuously between the first and second side edges of at least one of the panels at a location closer to the bottom edge than the permanent adhesive layer. The resealable sealing structure being configured to repeatedly and nondestructively seal and unseal the first and second panels together to prevent access to the bag interior. A perforation line extends between the first and second side edges of the first and second panels between the permanent adhesive layer and the resealable sealing structure. The perforation line is configured to allow removal of a portion of the panels to permit access to the bag interior after the first release liner strip has been removed and the panels have been sealed by the permanent adhesive layer. The resealable sealing structure, permanent adhesive layer and first release liner strip are configured to permit repeated and nondestructive access to the bag interior before the first release liner strip has been removed and the panels have been sealed by the permanent adhesive layer.

[0005] Other objects and features will be in part apparent and in part pointed out hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] FIG. **1** is a front elevation of a sealable bag with parts broken away to show internal construction;

[0007] FIG. **2** is a fragmentary cross section of the sealable bag of FIG. **1**;

[0008] FIG. **3** is a cross section of the sealable bag of FIG. **1**, illustrating the bag as sealed by the resealable sealing structure before the release liner strip has been removed;

[0009] FIG. **4** is a fragmentary perspective illustrating removal of the release liner strip of the sealable bag of FIG. **1**; and

[0010] FIG. **5** is a fragmentary perspective illustrating removal of a top portion of the sealable bag of FIG. **1**.

[0011] Corresponding reference characters indicate corresponding parts throughout the drawings.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0012] Referring to FIGS. **1** and **2**, a sealable bag is shown generally at **10**. The sealable bag **10** includes coextensive front and panels **12** and **14**, respectively (broadly, first and second panels). The panels **12**, **14** are joined at the bottom and sides of the bag **10**. In one embodiment, the panels **12**, **14** are formed as a single sheet of material that is folded at the bottom of the bag **10** along a linear fold **16**. The side edges are joined together by fusion lines **18** and **20**. The panels **12**, **14** can be joined in other manners within the scope of this invention. For example, the panels may be formed as separate sheets and fused together along the bottom and side edges. Whether the panels are formed as one piece and folded over, or formed as two pieces, the edges are considered to be "joined" together for purposes of this description. Furthermore, in some embodiments, the panels **12**, **14** may not be coextensive. For example, the top of one of the panels can extend above the top of the other panel.

[0013] The joined panels **12**, **14** define a bag interior **22** for receiving items placed in the bag **10**. The top edges **24**, **26** of the panels **12**, **14** are initially unsecured along their length to define an opening **28** permitting access to the bag interior **22** and its contents. In the illustrated embodiment, a continuous band or layer of pressure sensitive adhesive **30** extends along the inner surface of the back panel between the sides thereof, near the top edge **26** of the back panel. Other configurations of the band of pressure sensitive adhesive are within the scope of the present invention. For example, the band of pressure sensitive adhesive can extend along the front panel **12**, or both panels can include a band of pressure sensitive adhesive.

[0014] A release liner strip **32** initially separates the adhesive band **30** from the inner surface of the front panel **12**. The release liner strip **32** extends continuously along the entire length of the adhesive band **30**, e.g. continuously between the side edges of the back panel **14**. In the illustrated embodiment, a bottom edge **34** of the release liner strip **32** extends below the adhesive band **30**, and a top edge **36** of the release

liner strip extends above the top edge **26** of the back panel **14**. Other configurations of the release liner strip are within the scope of the present invention.

[0015] Preferably, the adhesive band **30** is a type of adhesive that adheres strongly on contact with the material of the panels **12**, **14**. Thus, once the panels **12**, **14** are sealed to each other by the adhesive band **30**, they cannot be unsealed without destruction of the bag. Preferably, the adhesive band **30** is arranged so that the panels are sealed from side-to-side such that the bag interior is air and/or liquid tight. The adhesive band **30** is a permanent adhesive layer that permanently adheres the panels **12**, **14** to each other. In one embodiment, the panels **12**, **14** are formed of a thermoplastic sheet material, such as polyethylene or polypropylene, and the adhesive band **30** includes an adhesive that adheres strongly on contact with thermoplastic sheet material. An example of such an adhesive is a hot melt glue marketed by National Starch and Chemical Corporation, New York, N.Y., under the registered trademark "DURO-TAK."

[0016] In one embodiment, the connection of the panels **12**, **14** along the side edges of the bag **10**, represented by the fusion lines **18**, **20**, terminate at or are discontinued at the bottom edge **34** of the release liner strip **32**, so that the release liner strip delimits an unconnected or free top marginal portion in both panels. As a result, the front panel **12** can be folded away from the release liner strip **32** and the back panel **14** at the top of the bag **10** for easy access to and removal of the release liner strip. In order to form the bag **10** with this feature, the release liner strip **32** is preferably formed of a material that is both easily releasable from the adhesive band **30** and prevents the formation of the fusion lines **18** and **20** during formation of the bag **10**. For example, the release liner strip **32** can be formed from high density polyethylene coated with silicone on one surface to enable its release from the adhesive band **30**, and the release liner strip can additionally include a silicone coating on the side facing the front panel **12**. As a result of the silicone coating on both sides, heat fusion of the panels **12**, **14** is prevented over the width of the release liner strip **32**. Alternatively, the strip **32** can be formed of paper coated with silicone on only one side to enable release of the strip from the adhesive band **30**. A material such as paper will also prevent the formation of a fusion line through both layers of the plastic material forming the panels **12**, **14**. It is understood that this feature may be omitted, and the side edges of the panels may be fused along their entire lengths within the scope of the present invention.

[0017] The bag **10** also includes a resealable sealing structure extending continuously between the side edges of the bag along one or both of the panels **12**, **14**. In the illustrated embodiment, the resealable sealing structure is a second continuous band or layer of pressure sensitive adhesive **40**. However, other resealable sealing structures are within the scope of the present invention, such as a zippered seal (e.g., a Zip-Loc® type sealing structure).

[0018] The second continuous band or layer of pressure sensitive adhesive **40** extends along the inner surface of the back panel **14** between the sides thereof, below the first adhesive band **30** but still located near the top edge **26** of the back panel. Other configurations of the band of pressure sensitive adhesive are within the scope of the present invention. For example, the band of pressure sensitive adhesive **40** can extend along the front panel **12**, or both panels can include a band of pressure sensitive adhesive.

[0019] The second adhesive band **40** provides a temporary and releasable seal between the panels **12**, **14**. Preferably, the second adhesive band **40** is arranged so as to provide a temporary air and/or liquid tight seal of the interior space **22** when sealed. The panels **12**, **14** can be sealed, unsealed, and resealed by the second adhesive band **40** repeatedly and non-destructively. Accordingly, a release liner strip is not required for the second adhesive band **40**. However, a release liner strip similar to the strip **32** described above can be provided to overlie the second adhesive band **40** within the scope of the present invention. In one embodiment, the adhesive band **40** includes an adhesive that repeatedly and releasably adheres on contact with thermoplastic sheet material. An example of such an adhesive is a double-coated clear polyester film tape marketed by International Tape Company, Windham, N.H., as Product 6342XL.

[0020] The bag **10** further includes an opening structure for removing a top portion **42** of the bag to open the bag after it has been sealed by the permanent adhesive band **30**, as will be described in more detail below. In the illustrated embodiment, the opening structure comprises a perforation line **44** extending between the side edges of both panels **12**, **14**, defining a tear line to allow a user to remove the portion of the bag **10** above the perforation line that includes the permanent adhesive band **30**. The perforation line **44** is located between the permanent adhesive band **30** and the temporary adhesive band **40**. Other opening structures are within the scope of the present invention, such as a score line, a notched line of weakness, intermittent perforation, or partial slitting. However, cuts extending through the entire thicknesses of the panels **12**, **14** are desirable because they make the bag **10** easier to tear and a controlled direction.

[0021] Use of the bag **10** will now be described with reference to FIGS. **3-5**. The panels **12**, **14** can be sealed and unsealed repeatedly before the release liner strip **32** is removed to permit sealing by the permanent adhesive band **30**. The bag interior **22** is configured to receive items, and the temporary adhesive band **40** can be activated to sealingly close the panels **12**, **14** to retain the items in the bag **10**. The temporary adhesive band **40** preferably provides as leak-proof seal to prevent any leaking. The perforation line **44** is easy to tear, but need not be leak-proof. The temporary adhesive band **40** provides a leak-proof seal to ensure items placed in the bag interior **22** cannot escape.

[0022] As seen in FIG. **4**, to permanently seal the panels **12**, **14**, the release liner strip **32** is removed from the adhesive band **30**. The panels **12**, **14** may then be sealed by applying pressure across the adhesive band **30**, which, as described above, is a pressure sensitive adhesive. When the panels **12**, **14** are permanently sealed by the adhesive band **30**, it is preferable to also seal the panels with the temporary adhesive band **40** to ensure a leak-proof seal. Once the bag **10** has been sealed by the permanent adhesive band **40**, it cannot be unsealed without destruction of the bag.

[0023] To open the bag **10** after it has been sealed by the permanent adhesive band **30**, a user tears the bag along the perforation line **44**, as shown in FIG. **5**. After the top portion **42**, which includes the permanent adhesive band **30**, has been removed, the bag **10** can once again be opened to permit access to the bag interior **22**. After removal of the top portion **42**, the bag **10** can still be repeatedly and nondestructively sealed and unsealed by the temporary adhesive band **40**.

[0024] Having described the invention in detail, it will be apparent that modifications and variations are possible without departing from the scope of the invention defined in the appended claims.

[0025] When introducing elements of the present invention or the preferred embodiments(s) thereof, the articles "a", "an", "the" and "said" are intended to mean that there are one or more of the elements. The terms "comprising", "including" and "having" are intended to be inclusive and mean that there may be additional elements other than the listed elements.

[0026] In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

[0027] As various changes could be made in the above products without departing from the scope of the invention, it is intended that all matter contained in the above description and shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A plastic bag comprising:

a first panel having four edges;

a second panel having four edges, the first panel and second panel defining a bag interior and an opening to permit access to the bag interior;

a permanent sealing structure configured to permanently seal the first and second panels to close the opening and prevent access to the bag interior such that the bag cannot be re-opened without destruction of the bag;

a release liner strip overlying the permanent sealing structure to prevent the permanent sealing structure from sealing the first and second panels until activation by a user; and

a resealable sealing structure configured to repeatedly and nondestructively seal and unseal the first and second panels to close the opening and prevent access to the bag interior.

2. The plastic bag of claim **1**, wherein the permanent sealing structure comprises pressure sensitive adhesive.

3. The plastic bag of claim **1**, wherein the resealable sealing structure comprises pressure sensitive adhesive.

4. The plastic bag of claim **1**, wherein the resealable sealing structure comprises a zippered seal.

5. The plastic bag of claim **1**, further comprising an opening structure configured to allow removal of a portion of the first and second panels to permit access to the bag interior after the release liner strip has been removed and the first and second panels have been sealed by the permanent sealing structure.

6. The plastic bag according to claim **5** wherein the opening structure comprises lines of perforations extending through the first and second panels.

7. The plastic bag according to claim **1**, wherein the release liner strip includes a silicone coating.

8. The plastic bag according to claim **1**, wherein the resealable sealing structure provides a leak-proof seal of the bag interior.

9. The plastic bag according to claim **1**, wherein the permanent sealing structure and the resealable sealing structure are both located proximate a top portion of the first and second panels.

10. The plastic bag according to claim **1**, wherein the resealable sealing structure is located closer to a bottom portion of the first and second panels than the permanent sealing structure.

11. A plastic bag comprising:

a first panel having a bottom edge, first and second side edges, and a top edge;

a second panel having a bottom edge, first and second side edges, and a top edge, the first and second panels being joined at the respective bottom edges and first and second side edges to define a bag interior, the first and second panels defining an opening between the respective top edges permitting access to the bag interior;

a permanent adhesive layer extending continuously between the first and second side edges of at least one of the panels, the permanent adhesive layer being configured to permanently seal the top edges of the first and second panels together to prevent access to the bag interior;

a first release liner strip extending continuously between the first and second side edges of one of the panels and overlying the permanent adhesive layer, such that the permanent adhesive layer cannot seal the top edges of the first and second panels until the first release liner strip is removed;

a resealable sealing structure extending continuously between the first and second side edges of at least one of the panels at a location closer to the bottom edge than the permanent adhesive layer, the resealable sealing structure being configured to repeatedly and nondestructively seal and unseal the first and second panels together to prevent access to the bag interior; and

a perforation line extending between the first and second side edges of the first and second panels between the permanent adhesive layer and the resealable sealing structure, the perforation line configured to allow removal of a portion of the panels to permit access to the bag interior after the first release liner strip has been removed and the panels have been sealed by the permanent adhesive layer;

the resealable sealing structure, permanent adhesive layer and first release liner strip being configured to permit repeated and nondestructive access to the bag interior before the first release liner strip has been removed and the panels have been sealed by the permanent adhesive layer.

12. The plastic bag of claim **11**, wherein the resealable sealing structure comprises pressure sensitive adhesive.

13. The plastic bag of claim **12**, further comprising a second release liner strip extending continuously between the first and second side edges of one of the panels and overlying the resealable sealing structure, such that the resealable sealing structure cannot seal the first and second panels until the second release liner strip is removed

14. The plastic bag of claim **11**, wherein the resealable sealing structure comprises a zippered seal.

15. The plastic bag of claim **11**, wherein the permanent adhesive layer and the resealable sealing structure are both proximate the top edges of the panels.

16. The plastic bag according to claim **11** wherein the release liner strip includes a silicone coating.

17. The plastic bag according to claim **11**, wherein the resealable sealing structure provides a leak-proof seal.

18. The plastic bag according to claim **11** wherein the perforation lines include perforations extending through the thicknesses of the panels.

* * * * *