US 20080308445A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0308445 A1

(43) Pub. Date: Dec. 18, 2008

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(54) **BLISTER PACK**

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(21) Appl. No.: **11/763,217**

(22) Filed: **Jun. 14, 2007**

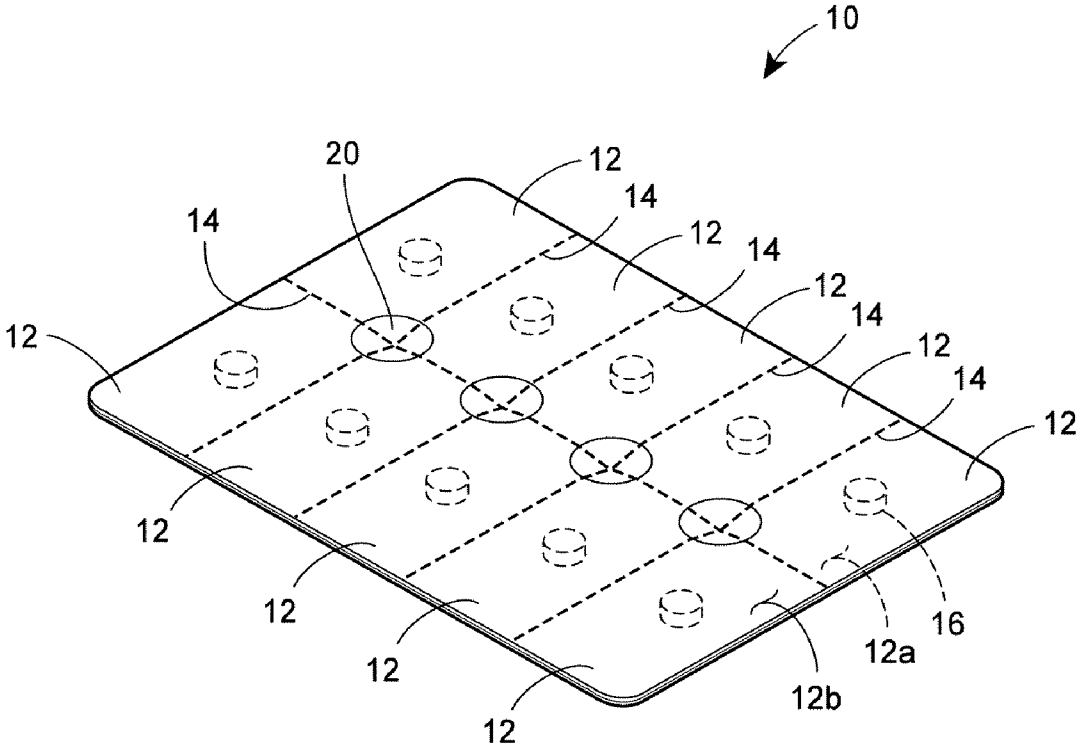
Publication Classification

(51) **Int. Cl.**
B65D 73/00 (2006.01)
B65B 5/00 (2006.01)

(52) **U.S. Cl.** **206/471**; 53/467

(57) **ABSTRACT**

A storage device for storing an ingestible substance includes a composite card having one or more perforated seams defining a plurality of individual cards connected together in a matrix. Each individual card includes a first side edge, a second side edge disposed transverse to the first side edge, a blister, and a first backing material. The blister extends from a first face of the individual card and is adapted to contain at least one dose of the ingestible substance. The first backing material is at least partly adhered to a second face of the individual card. The first backing material defines a pull tab that extends along the entirety of the first or second side edge.



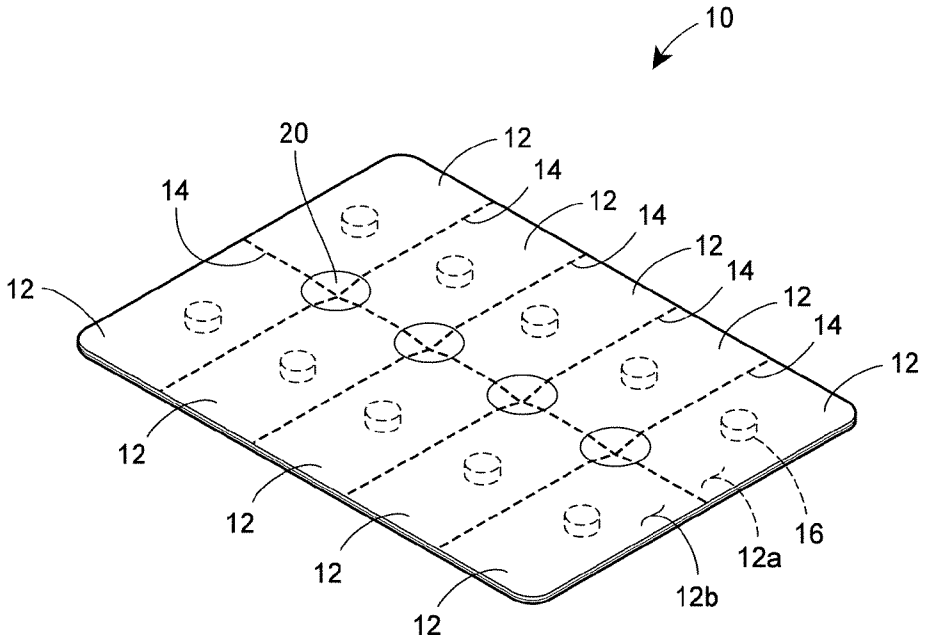

10
20
12
14
12
14
12
14
12
14
12
14
12
12
12
12
12
12
16
12a
12b

FIG. 1

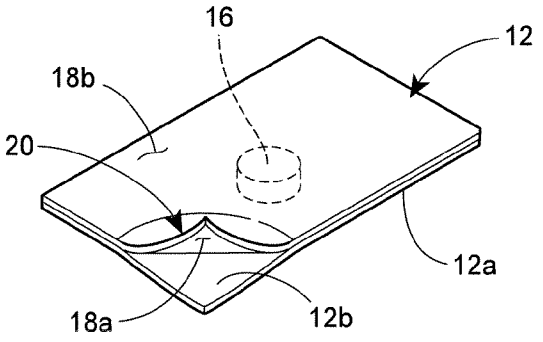

16
12
18b
20
12a
18a
12b

FIG. 2

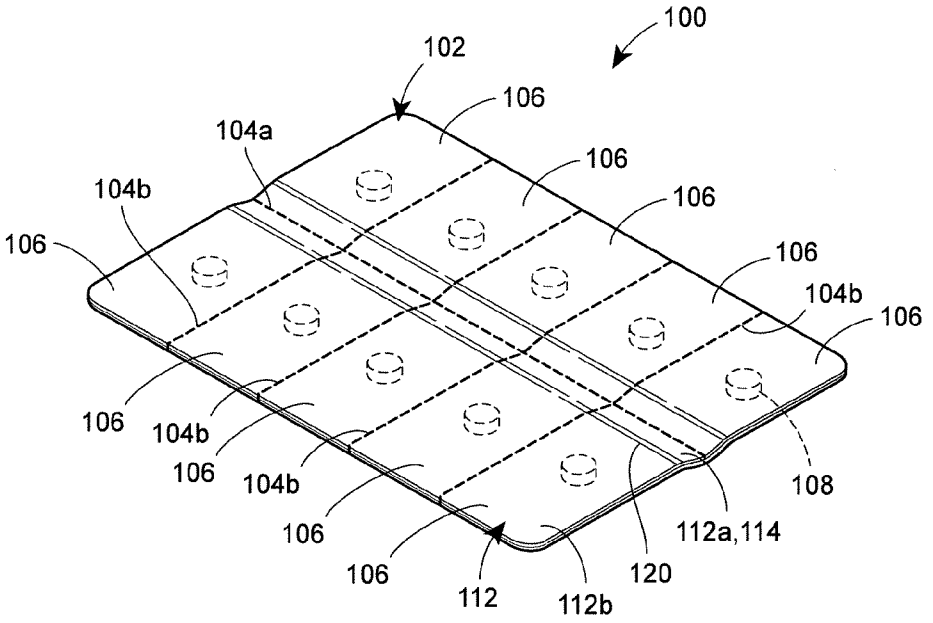

100
102
106
104a
106
104b
106
106
104b
106
106
104b
106
104b
106
106
104b
106
108
112a,114
120
112
112b

FIG. 3

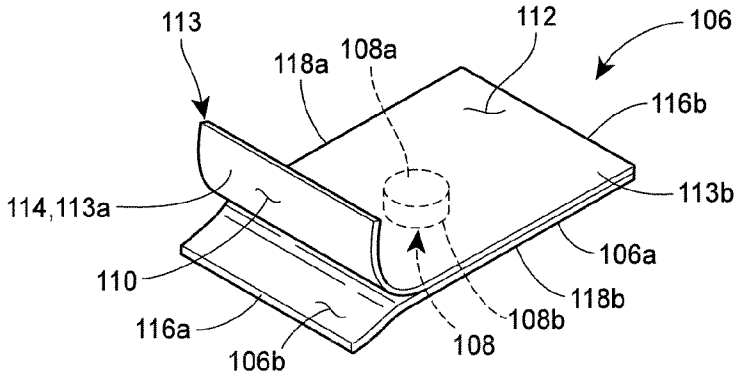

113
112
106
118a
108a
116b
114,113a
113b
106a
110
118b
108b
116a
108
106b

FIG. 4

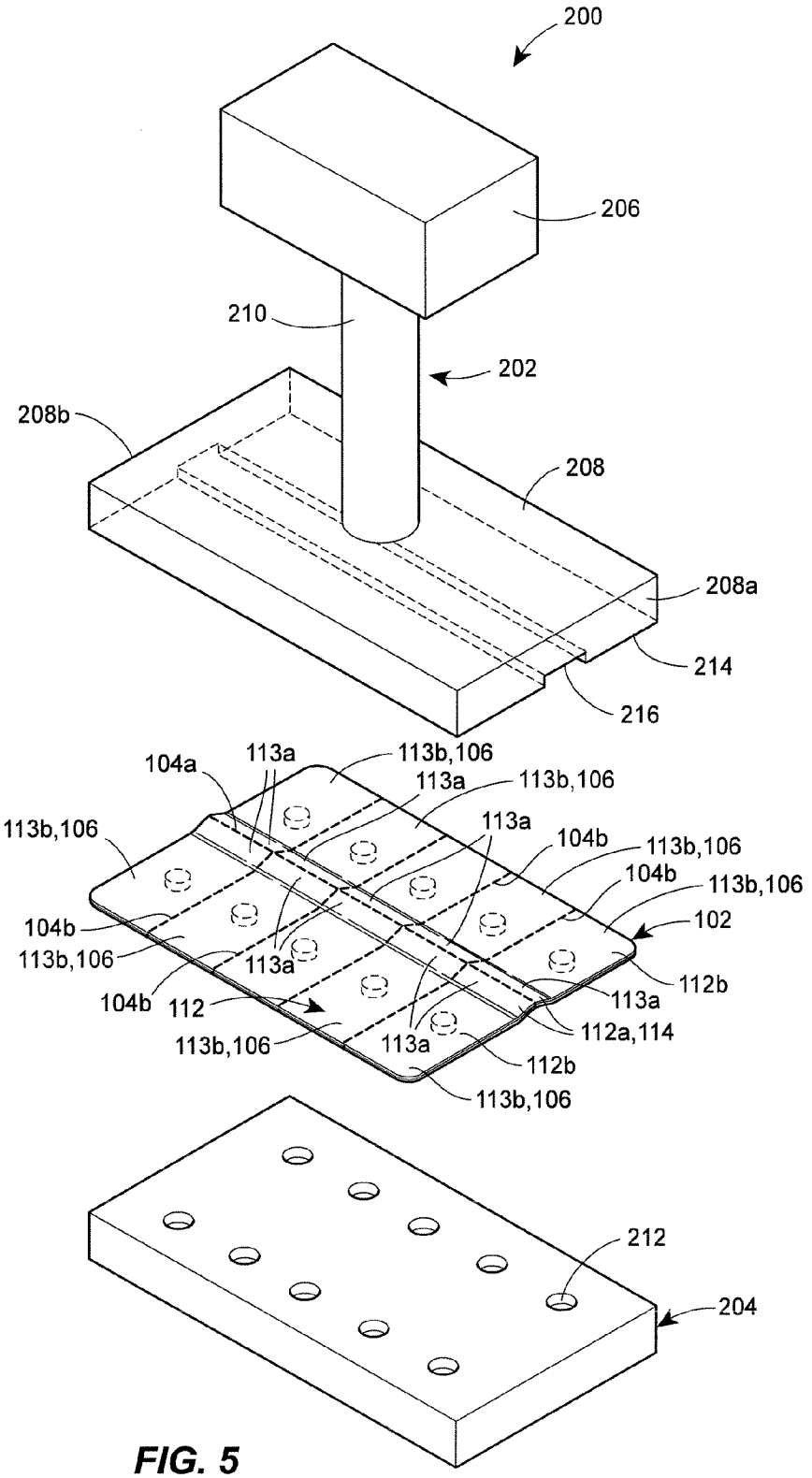

200
206
210
202
208b
208
208a
214
216
104a
113a
113b,106
113a
113b,106
113b,106
113a
104b
113b,106
104b
113b,106
102
104b
113b,106
113a
112b
104b
112
113a
112a,114
113b,106
113a
112b
113b,106
212
204

FIG. 5

BLISTER PACK

FIELD OF THE INVENTION

[0001] The present invention is generally related to blister packs and, more particularly, to blister packs having a peel off backing material.

BACKGROUND

[0002] Pharmaceutical prescriptions and over-the-counter medications are often stored in blister packs. Typical blister packs include a plurality of individual dose cards attached together in a matrix by perforated seams. Each individual dose card includes a transparent plastic blister, which contains a single dose of one or more medications.

[0003] FIG. **1** depicts one conventional blister pack **10** that includes a plurality of individual blister cards **12**. The individual cards **12** are connected together by perforated seams **14** such that an individual may remove one or more of the individual cards **12** from the remainder of the blister pack **10**, as depicted in FIG. **2**, for example.

[0004] As shown in FIG. **2**, each individual card **12** of the conventional blister pack **10** includes a front-side **12***a*, a back-side **12***b*, a blister **16**, a foil backing material **18***a*, and a paper backing material **18***b*. The blisters **16** include cylindrical containers constructed of transparent plastic, for example, extending from the front-sides **12***a* of the individual cards **12**. The blisters **16** are therefore adapted to contain tablets, pills, or any other delivery device for medications or other ingestible substances.

[0005] Typically, the foil backing material **18***a* and the paper backing material **18***b* constitute a bi-laminate material that is heat-sealed to the back-sides **12***b* of the individual cards **12**. For example, the foil backing material **18***a* is heat-sealed directly to the cards **12** and the paper backing material **18***b* is heat-sealed to the foil backing material **18***a*. As depicted in FIG. **2**, however, the bi-laminate foil and paper backing materials **18***a*, **18***b* define pull tabs **20**, which are not adhered to the back-side **12***b* of the card **12**. Accordingly, an individual may grasp the pull tab **20** to peel the paper backing material **18***b* from the portion of the foil backing material **18***a* that is adhered to the card **12**. Specifically, peeling the paper backing material **18***b* separates the paper backing material **18***b* from the foil backing material **18***a* that is adhered to the card **12**. Thereafter, the individual may push the blister **16** and force the tablet, pill, or other delivery device through the foil backing material **18***a*. Such a medicinal storage device is often referred to as a peel-and-push blister card or package.

[0006] As illustrated, the pull tabs **20** of the conventional peel-and-push blister card **10** are disposed at the corners of the individual cards **12**. Accordingly, the amount of area that each pull tab **20** provides for an individual to grasp is limited by the size and geometry of the individual cards **12**. Moreover, when the pull tabs **20** are pulled by a user, the paper backing material **18***a* often tears such that a portion remains attached to the individual cards **12**, thereby covering the blisters **16** and preventing easy access to the pill, tablet, or other delivery device.

SUMMARY

[0007] One embodiment of the present invention includes a storage device for storing an ingestible substance. The storage device generally includes a composite card having one or more perforated seams defining a plurality of individual cards connected together in a matrix. Each individual card includes a first side edge, a second side edge disposed transverse to the first side edge, a blister, and a first backing material. The blister extends from a first face of the individual card and is adapted to contain at least one dose of the ingestible substance. The first backing material is at least partly adhered to a second face of the individual card. The first backing material defines a pull tab that extends along the entirety of the first or second side edge.

[0008] In another embodiment, the one or more perforated seams of the composite card includes a first seam and at least one second seam intersecting the first seam. So configured, each of the pull tabs of the individual cards are disposed adjacent the first seam.

[0009] In another embodiment, the storage device may further include a second backing material adhered to the second face of the individual cards between the individual cards and the first backing material.

[0010] In one embodiment, the second backing material may include a foil material that covers the second surface of the individual cards and encloses the blisters.

[0011] Another embodiment of the present invention includes a method of manufacturing a storage device for storing an ingestible substance. The storage device may include a composite card defining a plurality of individual cards connected by a first perforated seam and a second perforated seam intersecting the first perforated seam. Each individual card may include a first rectangular portion disposed adjacent the first perforated seam and a second rectangular portion spaced from the first perforated seam.

[0012] The method generally includes delivering a dose of the ingestible substance into each of a plurality of blisters extending from a first surface of the individual cards. Additionally, a backing material is applied to a second surface of the plurality of individual cards to seal the blisters. The backing material includes a first rectangular portion and two second rectangular portions. The first rectangular portion overlies the first portion of each individual card and defines a pull tab for removing the backing material from each individual card. The second rectangular portions are disposed on opposing sides of the first portion and are adhered to the second portions of the individual cards.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. **1** is a perspective view of a conventional blister pack;

[0014] FIG. **2** is a perspective view of an individual blister card of the conventional blister pack of FIG. **1**;

[0015] FIG. **3** is a perspective view of a blister pack constructed in accordance with the principles of the present invention;

[0016] FIG. **4** is a perspective view of an individual blister card of the blister pack of FIG. **3**; and

[0017] FIG. **5** is a partial schematic representation of a machine for at least partially manufacturing the blister pack of FIG. **3**.

DETAILED DESCRIPTION

[0018] FIG. **3** depicts one peel-and-push blister pack **100** constructed in accordance with the principles of the present invention. The blister pack **100** includes a composite blister card **102** having a plurality of perforated seams **104**. The perforated seams **104** define a plurality of individual blister

cards **106**. The disclosed embodiment of the composite card **102** is generally rectangular and includes a longitudinal perforated seam **104***a* and four (4) transverse perforated seams **104***b* intersecting the longitudinal seam **104***a*. Thus, the disclosed embodiment of the composite card **102** includes ten (10) individual cards **106**. Alternative embodiments of the composite card **102**, however, may include generally any number of individual cards **106** arranged in generally any matrix.

[0019] As illustrated in FIG. **4**, each individual card **106** includes a front-side **106***a*, a back-side **106***b*, a blister **108**, and a backing material **113**. The blisters **108** include containers with open ends **108***a* and closed ends **108***b*. In the disclosed embodiment, the blisters **108** include generally cylindrical containers; however, in alternative embodiments, the blister **108** may have generally any shape. The open ends **108***a* of the blisters **108** are disposed adjacent to and substantially flush with the back-sides **106***b* of the individual cards **106**. The closed ends **108***b* are spaced from the front-sides **106***a* of the individual cards **106**. The blisters **108** are therefore adapted to contain tablets, pills, or any other delivery device (not shown) for medications or other ingestible substances, for example. In one embodiment, the blisters **108** and the individual cards **106** may be integrally constructed as one piece of transparent plastic material. In another embodiment, the individual cards **106** may be constructed of paper, cardboard, or generally any other material and the blisters **108** may include flanges (not shown), for example, disposed adjacent to and fixed to the individual cards **106**.

[0020] The backing material **113** includes a bi-laminate material including a foil backing layer **110** and a paper backing layer **112** that are uniformly adhered together. In the disclosed embodiment, the backing material **113** includes a first portion **113***a* and a second portion **113***b*. The second portion **113***b* of the backing material **113** and, more particularly, the foil backing layer **110** of the second portion **113***b*, is directly and uniformly adhered to the back-side **106***b* of the individual card **106**. For example, in one embodiment, the foil backing layer **110** of the second portion **113***b* is heat-sealed to the back-side **106***b* of the individual card **106**. Accordingly, the paper backing layer **112** of the second portion **113***b* of the backing material **113** is also adhered to the back-side **106***b* of the individual card **106** via the adhesion to the foil backing layer **110**. As depicted, the first portion **113***a* of the backing material **113**, which includes portions of both the foil and paper backing layers **110**, **112**, is not adhered to the card **106**. Rather, the first portion **113***a* of the backing material **113** defines a pull tab **114**. The pull tab **114** is freely separable from the individual card **106**.

[0021] So configured, an individual may grasp the pull tab **114** to peel the backing material **113** from the individual card **106**, thereby gaining access to the medication(s) stored in the blister **108**. Specifically, in one embodiment, pulling the pull tab **114** separates the paper backing layer **112** of the second portion **113***b* of the backing material **113** from the foil backing layer **110** of the second portion **113***b* of the backing material **113**. Thus, the paper backing layer **112** is completely removed from the card **106**, while the foil backing layer **110** located the second portion **113***b* of the backing material **113** remains adhered to the card **106**. The individual may then push the blister **108** and force the tablet, pill, or other delivery device through the remaining foil backing layer **110**. In one alternative embodiment, pulling the pull tab **114** removes both the paper and foil backing materials **112**, **110** from the card **106**, thereby eliminating the need to force the tablet, pill, or other delivery device through the foil backing layer **110** by pushing the blister **108**.

[0022] For descriptive purposes and with continued reference to FIG. **4**, each individual card **106** includes first and second end edges **116***a*, **116***b* and a first and second side edges **118***a*, **118***b*. The side edges **118***a*, **118***b* are disposed transverse to the end edges **116***a*, **116***b*, thereby defining generally rectangular individual cards **106**. Additionally, the first and second portions **113***a*, **113***b* of the backing material **113** are rectangular and extend completely between the first and second side edges **118***a*, **118***b*, as depicted. Moreover, the first portion **113***a* of the backing material **113** on each individual card **106**, which also defines the pull tab **114**, extends from the first end edge **116***a* toward the second end edge **116***b* and terminates at a boundary, which is identified by reference numeral **120** in FIG. **3**. The second portion **113***b* of the backing material **113** on each individual card **106** extends from the boundary **120** to the second end edge **116***b*. Accordingly, in the disclosed embodiment, the second portion **113***b* of the backing material **113** is larger than the first portion **113***a* and covers the open end **108***a* of the blister **108**.

[0023] As mentioned, the first portion **113***a* of the backing material **113** also defines the pull tab **114** for grasping and peeling the backing material **113** from the individual cards **106**. The pull tabs **114** are therefore, also rectangular, which advantageously provides more surface area for an individual to grasp than the conventional pull tabs **20** described above with reference to FIGS. **1** and **2**. A better grasp on the pull tab **114** enables the individual to remove the backing material **113** more easily.

[0024] As illustrated in FIG. **3** and mentioned above, each of the individual blister cards **106** are detachable from the composite blister card **102**. In one embodiment, the individual cards **106** contain a single dose of a medicine, for example. Accordingly, the composite card **102** contains a plurality of doses. The perforated seams **104***a*, **104***b* enable an individual to tear each individual card **106** from the composite card **102** to carry a single dose away or to discard an empty individual card **106**, for example.

[0025] The process of manufacturing the blister card **100** of the present invention typically begins with the composite card **102** without the backing material **113** and including empty blisters **108**. FIG. **5** schematically, and generally, depicts one embodiment of a machine **200** for applying the backing material **113**. The machine **200** generally includes a press **202** and a tray **204**. The press **202** includes an actuator **206** coupled to move a press plate **208** via a piston **210**. The actuator **206** may be a mechanical actuator, an electromechanical actuator, a manual actuator, or any other device capable of moving the press plate **208**. The press plate **208** includes a generally flat rectangular plate including a pressing surface **214** for engaging the backing material **113**, as will be described. Additionally, the press plate **208** defines a groove, or elongated recess, **216**. In the disclosed embodiment, the groove **216** extends completely through the press plate **208** from a first end **208***a* to a second end **208***b*. In one embodiment, the press plate **208** may also include a heating element (not shown) for heating the press plate **208** during a heat sealing operation. The tray **204** includes a generally flat plate defining a plurality of recesses **212**. The tray **204** therefore supports the composite card **102** with the blisters **108** received in the recesses **212**, such that back-sides **106***b* of the individual cards **106** (shown in FIG. **4**) face upward and toward the press plate **208**.

[0026] With the composite card **102** positioned in the tray **204**, a piece of the backing material **113** is moved into place on top of the card **102** with the foil backing layer **110** engaging the composite card **102**. Then, the actuator **206** moves the press plate **208** such that the pressing surface **214** engages the backing material **113**. Specifically, the pressing surface **214** only engages the second portions **113***b* of the backing material **113** on individual cards **106**. The groove **216** in the press plate **208** receives the first portions **113***a* of the backing material **113** on the individual cards **106**. Accordingly, the press plate **208** simultaneously compresses, heats, and uniformly adheres the second portions **113***b* of the backing material **113** to the composite card **102**.

[0027] With the backing material **113** applied to the composite card **102**, the perforated seams **104***a*, **104***b* are introduced to the composite card **102**. Specifically, in one embodiment, the composite card **102** is moved into a cutting press (not shown) having a plurality of blades or other cutting tools arranged in the proper orientation for forming the perforated seams **104**. The cutting press moves into engagement with the composite card **102** to form the perforated seams **104**. In another embodiment, the composite card **102** may be moved into engagement with one or more cutting wheels for forming the perforated seams **104**, or the perforated seams **104** may be formed by any other known process.

[0028] While the pull tabs **114** of the embodiment of the individual cards **106** described above include both the foil backing layer **110** and the paper backing layer **112**, alternative embodiments may include pull tabs **114** constructed of only the paper backing layer **112**. For example, in one alternative embodiment, the backing material **113** of the blister card **100** may only include the paper backing layer **112**. So constructed, the blister card **100** would only require the paper backing layer **112** to be peeled from the individual cards **106** to access the tablets, pills, or other delivery device stored in the blisters **108**.

[0029] In another alternative embodiment, the backing material **113** may include both foil and paper backing layers **110**, **112**, but the foil and paper backing layers **110**, **112** are not adhered together in the region of the first portion **113***a* of the backing material **113**, which constitutes the pull tab **114**. Rather, only the foil and paper backing layers **110**, **112** located in the second portion **113***b* of the backing material **113** are adhered together. So configured, the entire foil backing layer **110** is uniformly adhered to the back-side **106***b* of the individual card **106** such that the pull tab **114** is only defined by a portion of the paper backing layer **112**. Therefore, an individual may grasp the pull tab **114** in a manner similar to that described above to peel the backing material **113** from the card **106**. Specifically, as the individual pulls the pull tab **114**, the paper backing layer **112** of the second portion **113***b* may separate from the foil backing layer **110** of the second portion **113***b*, thereby requiring the individual to push the tablet, pill, or other delivery device through the remaining foil backing layer **110**. Alternatively, pulling the pull tab **114** may remove the entire second portion **113***b* of the backing material **113** from the card **106** including both the foil and paper backing layers **110**, **112**.

[0030] One process for constructing this alternative blister card **100**, would first require the foil backing layer **110** to be completely and uniformly adhered to the back-sides **106***b* of the individual cards **106** of the composite card. For example, after filling each blister **108** with the desired number of tablets, the composite card **102** may be transferred to a first pressing machine. The first pressing machine (not shown) may include a heat sealing machine that completely and uniformly heat seals the foil backing layer **110** to the back-side of the composite card **102** and therefore, the back-side **106***b* of each individual card **106**. The foil backing layer **110** seals over the open ends **108***a* of the blisters **108** to contain the tablets. The heat sealing machine for applying the foil backing layer **110** may include a single uniformly flat press plate, for example. The press plate may simultaneously compress, heat, and adhere the foil backing layer **110** to the composite card **102**. After the foil backing layer **110** is applied to the composite card **102**, the composite card **102** may be moved into a separate machine such as the machine **200** described above with reference to FIG. **5** for applying the paper backing layer **112**.

[0031] While the backing layers **110**, **112** have been disclosed herein as including a foil backing layer **110** and a paper backing layer **112**, alternative embodiments of the blister pack **100** constructed in accordance with the present invention may include backing layers constructed of different materials, including composite materials.

[0032] In light of the foregoing, it should be appreciated that the present invention is not limited to the example, embodiments, or other details provided herein, but rather, is intended to be defined by the spirit and scope of the following claims.

What is claimed:

1. A storage device for storing an ingestible substance, comprising:

a card having a first side edge and a second side edge, the second side edge disposed transverse to the first side edge;

a blister extending from a first face of the card and adapted to contain at least one dose of the ingestible substance;

a first backing material at least partly adhered to a second face of the card, the second face of the card disposed opposite the first face of the card, the first backing material comprising a pull tab that extends along the entirety of one of the first and second side edges.

2. The storage device of claim **1**, further comprising a second backing material adhered to the second face of the card, the second backing material disposed between the first backing material and the card.

3. The storage device of claim **2**, wherein the second backing material comprises a foil material covering the second surface of the card and enclosing the blister.

4. The storage device of claim **1**, wherein the card comprises a generally rectangular card.

5. The storage device of claim **4**, wherein the pull tab comprises a generally rectangular pull tab.

6. The storage device of claim **1**, wherein the ingestible substance comprises a medicinal substance.

7. The storage device of claim **1**, wherein the ingestible substance comprises at least one pill.

8. A storage device for storing an ingestible substance, comprising:

a composite card comprising one or more perforated seams defining a plurality of individual cards connected together in a matrix, each individual card comprising:

a first side edge;

a second side edge disposed transverse to the first side edge;

a blister extending from a first face of the individual card and adapted to contain at least one dose of the ingestible substance; and

a first backing material at least partly adhered to a second face of the individual card, the first backing material comprising a pull tab that extends along the entirety of one of the first and second side edges.

9. The storage device of claim **8**, wherein the one or more perforated seams of the composite card comprises a first seam and at least one second seam intersecting the first seam.

10. The storage device of claim **9**, wherein each of the pull tabs of the individual cards are disposed adjacent the first seam.

11. The storage device of claim **8**, further comprising a second backing material adhered to the second face of the individual cards between the individual cards and the first backing material.

12. The storage device of claim **11**, wherein the second backing material comprises a foil material covering the second surface of the individual cards and enclosing the blisters.

13. The storage device of claim **8**, wherein each individual card comprises a generally rectangular card.

14. The storage device of claim **13**, wherein each pull tab comprises a generally rectangular pull tab.

15. The storage device of claim **8**, wherein the ingestible substance comprises a medicinal substance.

16. The storage device of claim **8**, wherein the ingestible substance comprises at least one pill.

17. A storage device for storing an ingestible substance, comprising:

a composite card comprising one or more perforated seams defining a plurality of individual cards connected together in a matrix, each individual card comprising:

a first side edge;

a second side edge disposed transverse to the first side edge;

a blister extending from a first face of the individual card and adapted to contain at least one dose of the ingestible substance;

a foil backing layer adhered to a second face of the individual card and enclosing the blister; and

a paper backing layer partly adhered to the foil backing layer, the paper backing layer comprising a rectangular pull tab that extends along the entirety of one of the first and second side edges.

18. A method of manufacturing a storage device for storing an ingestible substance, the storage device comprising a composite card, the composite card comprising a plurality of individual cards connected by a first perforated seam and a second perforated seam intersecting the first perforated seam, each individual card comprising a first portion disposed adjacent the first perforated seam and a second portion spaced from the first perforated seam, the method comprising:

delivering a dose of the ingestible substance into each of a plurality of blisters, each blister extending from a first surface of one of the plurality of individual cards; and

applying a first backing material to a second surface of the plurality of individual cards, the first backing material comprising:

a first rectangular portion overlying the first portion of each individual card and defining a pull tab for each individual card, and

two second rectangular portions disposed on opposing sides of the first portion, the second portions overlying and adhered to corresponding second portions of the individual cards.

19. The method of claim **18**, wherein applying the first backing material comprises heat sealing the first backing material to the second surface of the individual cards.

20. The method of claim **19**, wherein heat sealing the first backing material to the second surface of the cards comprises moving a press plate into engagement with the second rectangular portion of the first backing material, the press plate comprising a groove accommodating the first rectangular portion of the first backing material.

21. The method of claim **18**, further comprising applying a second backing material to the second surface of the plurality of individual cards prior to applying the first backing material.

22. The method of claim **18**, further comprising perforating the first and second perforated seams subsequent to applying the first backing material.

* * * * *