US00RE41273E

(19) **United States**

(12) **Reissued Patent**

Perell

(10) **Patent Number: US RE41,273 E**

(45) **Date of Reissued Patent: Apr. 27, 2010**

(54) **ACCESS STRUCTURE WITH BURSTING DETONATOR FOR OPENING A SEALED PACKAGE**

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(21) Appl. No.: **12/184,809**

(22) Filed: **Aug. 1, 2008**

Related U.S. Patent Documents

Reissue of:

(64) Patent No.: **7,306,371**
Issued: **Dec. 11, 2007**
Appl. No.: **11/010,915**
Filed: **Dec. 14, 2004**

U.S. Applications:

(63) Continuation-in-part of application No. 10/831,964, filed on Apr. 26, 2004, now Pat. No. 6,938,394, which is a continuation-in-part of application No. 10/246,893, filed on Sep. 19, 2002, now Pat. No. 6,726,364.

(51) **Int. Cl.**
B65D 33/00 (2006.01)
B65D 33/16 (2006.01)

(52) **U.S. Cl.** **383/210**; 383/61.1

(58) **Field of Classification Search** 383/202, 383/210, 211, 61.1
See application file for complete search history.

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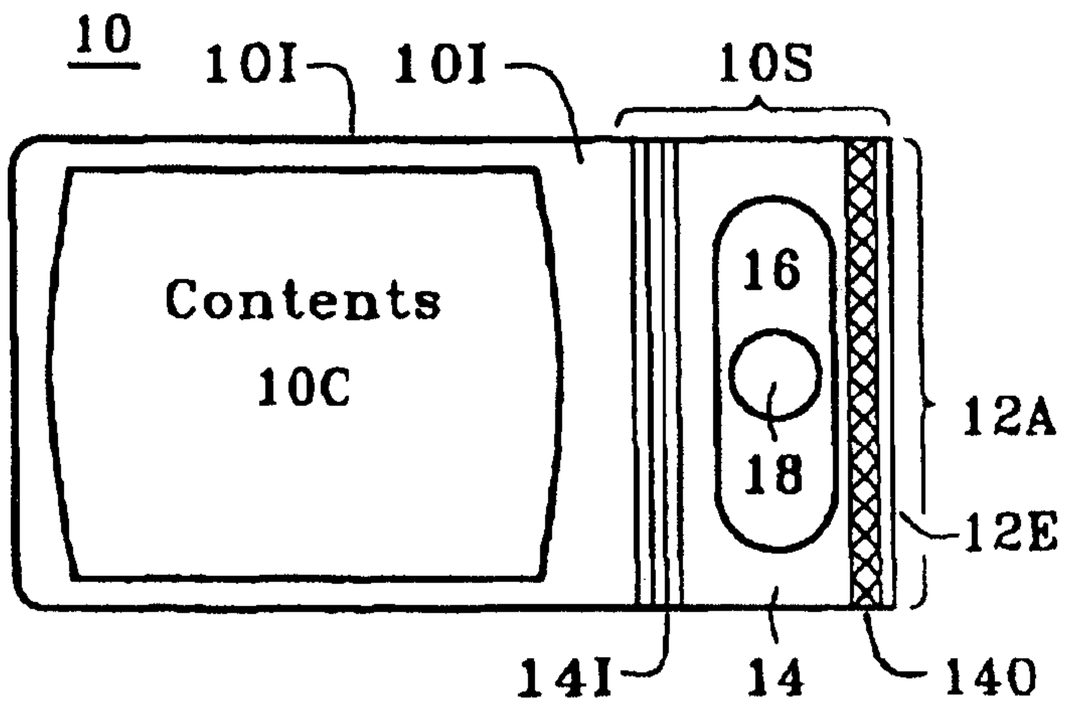
(57) **ABSTRACT**

Breaching access structure **10**S provides easy access to sealed interior **10**I containing contents **10**C. Access region **12**A proximate edge **12**E of package **10**, provides entrance into the interior and access to the contents. Band seal **14** formed by the upper lamina **14**U and lower lamina **14**L extends along the access region, enclosing breaching bubble **16**. The band seal has inner seal portion **14**I between the bubble and the interior, and outer seal portion **14**O between the bubble and edge **12**E of the package. The bubble is expandable to open the package in response to bursting detonator **18**. The detonator is burst by external pressure applied by a user. Opposed pair of peel flaps, upper flap **16**U and lower flap **16**L, are formed by the opposed laminae of the outer seal along the edge breach as the bubble breaches. These small initial flaps are grasped by the user and manually peeled apart to initiate opening the band seal.

42 Claims, 2 Drawing Sheets



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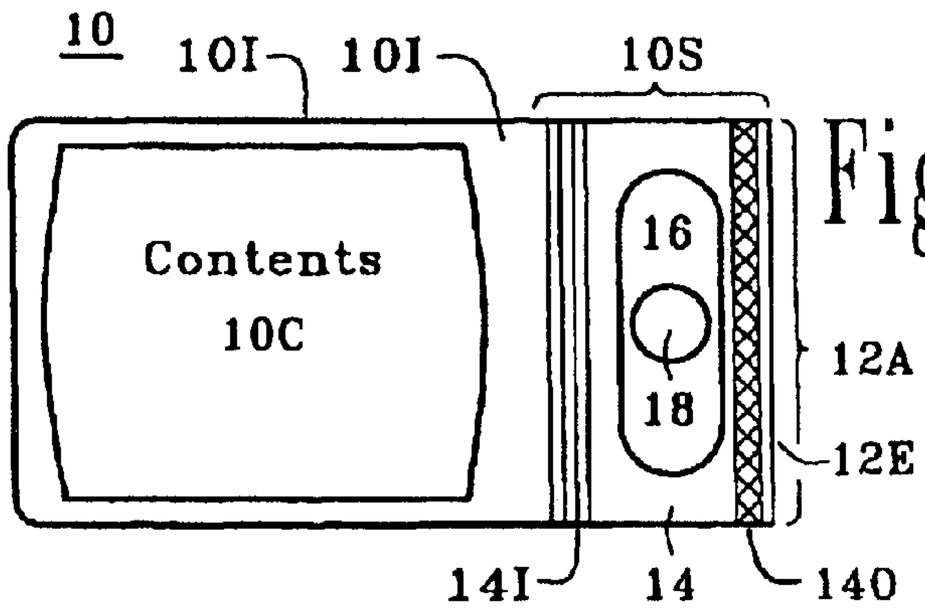

Fig 1A

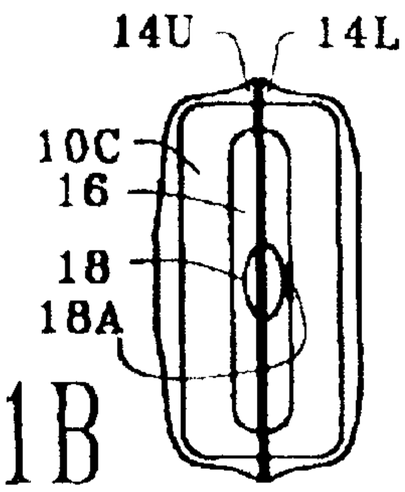

Fig 1B

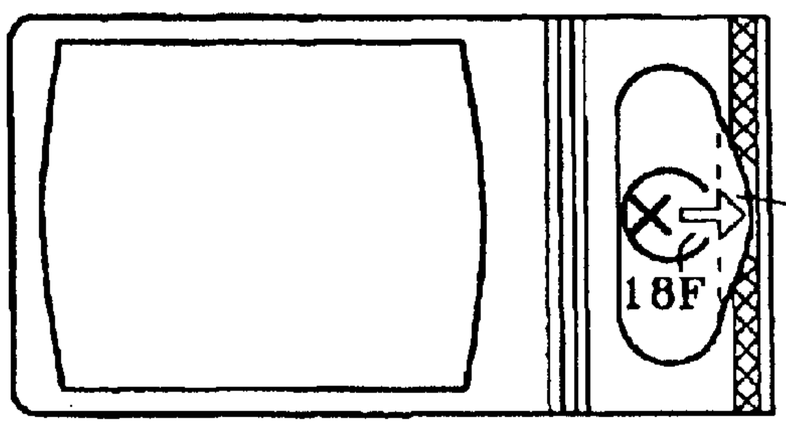

Fig 1C

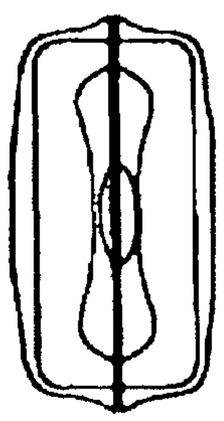

Fig 1D

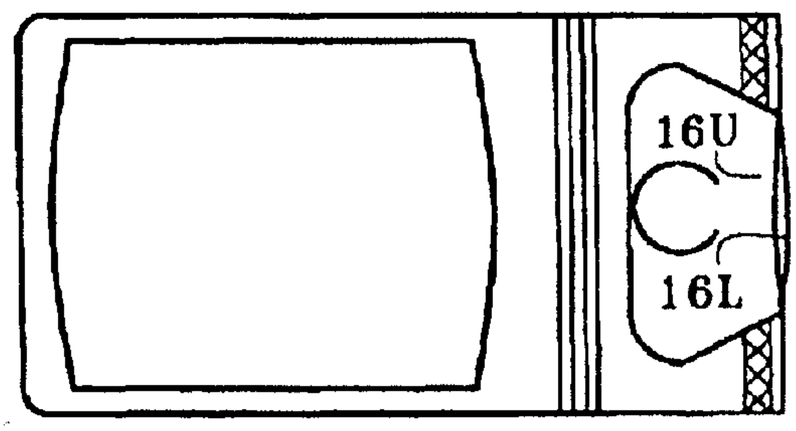

Fig 1E

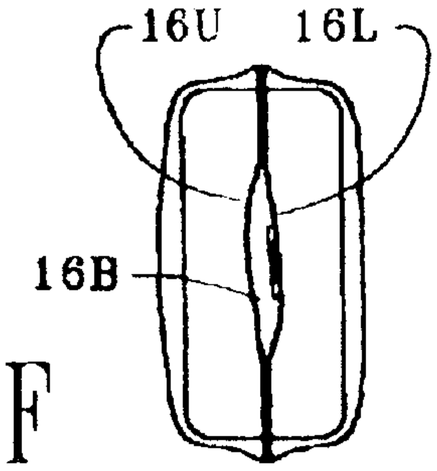

Fig 1F

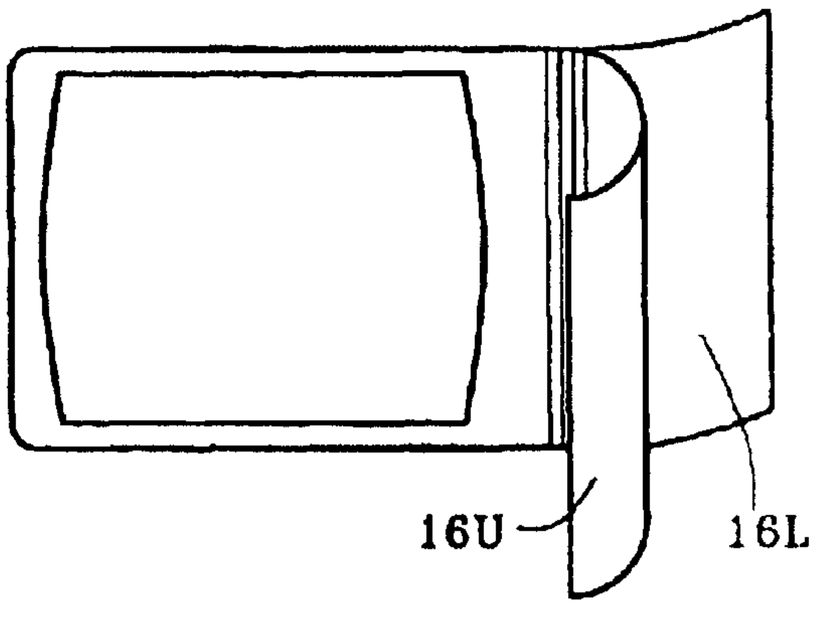

Fig 1G

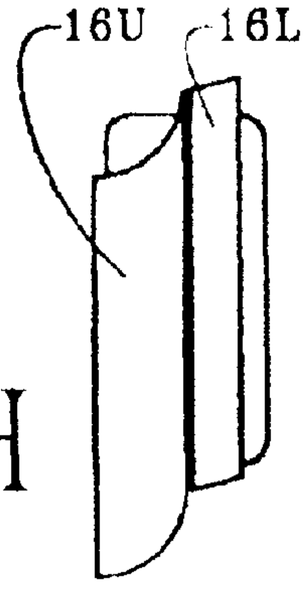

Fig 1H

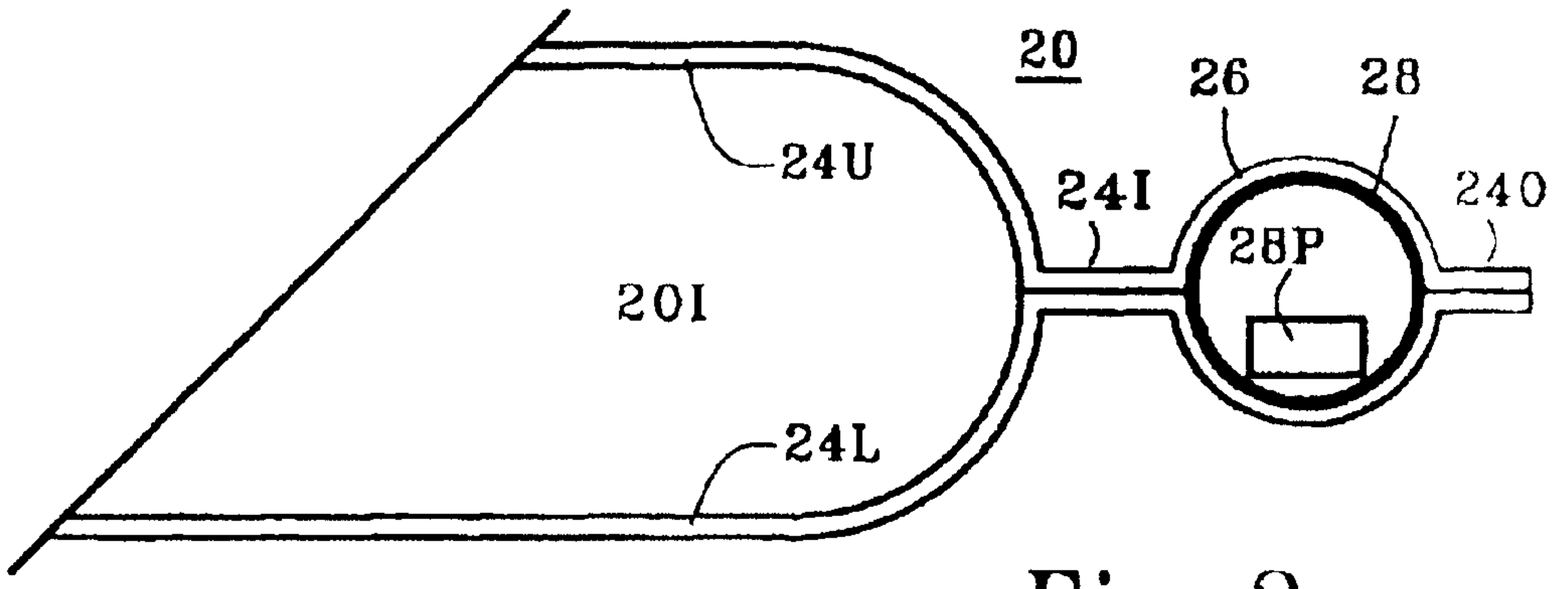

Fig 2

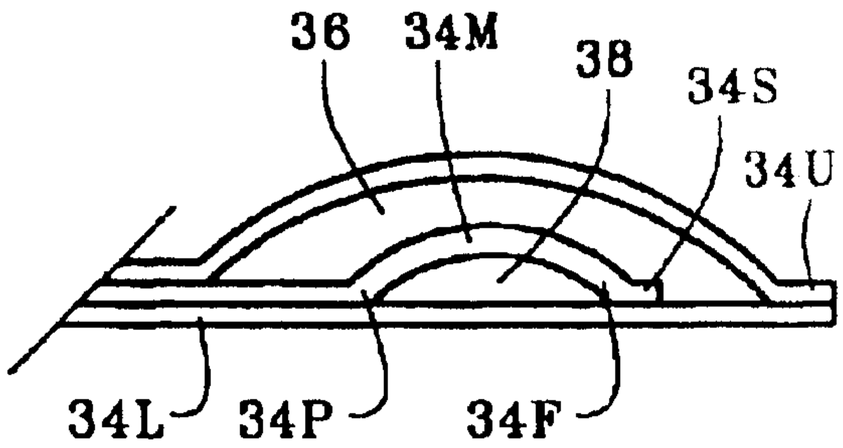

Fig 3

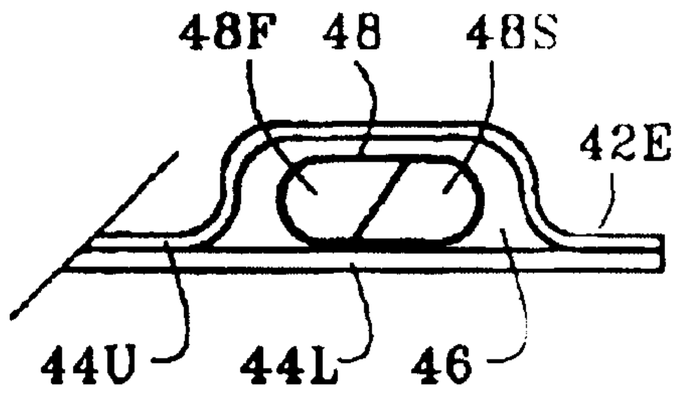

Fig 4

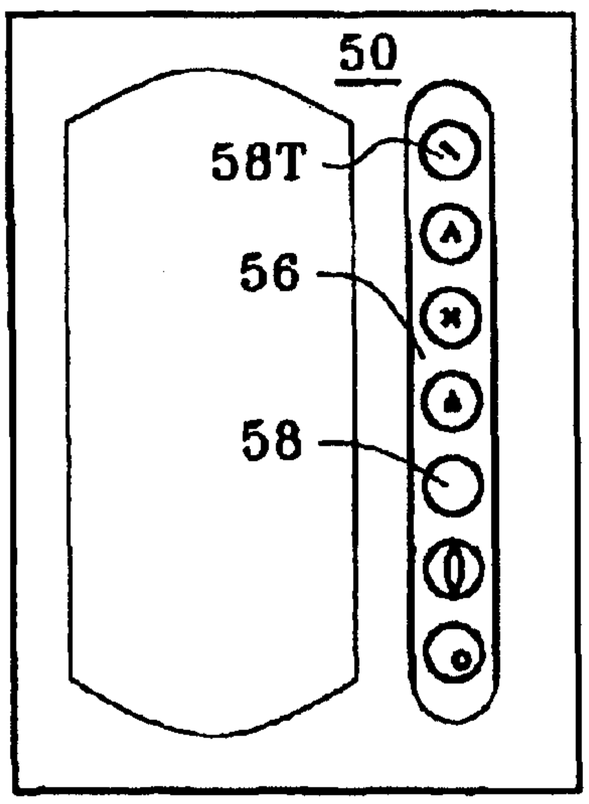

Fig 5

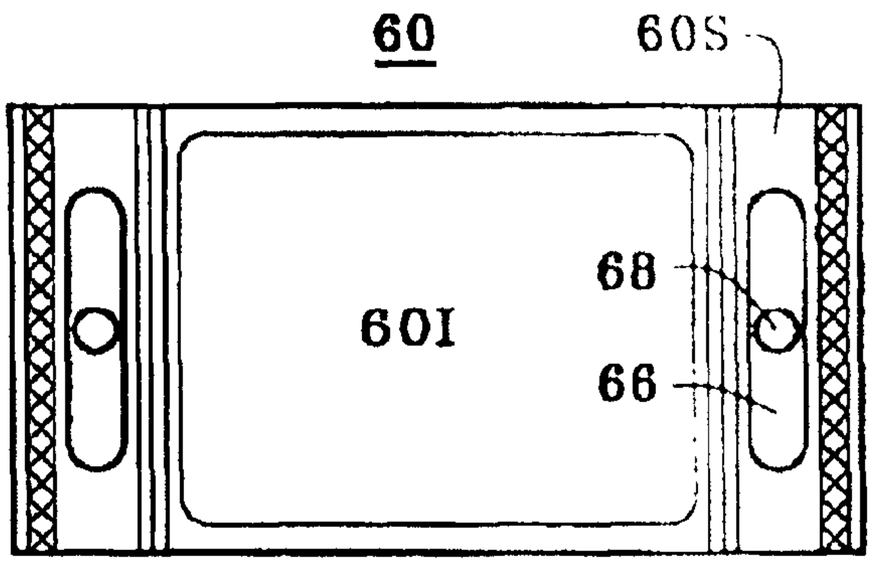

Fig 6

ACCESS STRUCTURE WITH BURSTING DETONATOR FOR OPENING A SEALED PACKAGE

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

RELATED APPLICATION DATA

This application is a continuation-in-part of U.S. patent application Ser. No. 10/831,964, filed Apr. 26, 2004, now U.S. Pat. No. 6,938,394, granted Sep. 6, 2005, which is a continuation-in-part of U.S. patent application Ser. No. 10/246,893, filed Sep. 19, 2002, now U.S. Pat. No. 6,726,364, granted Apr. 27, 2004.

TECHNICAL FIELD

This invention relates to a breaching access structure for a sealed package having a breaching bubble which edge breaches to provide peel flaps for opening the package, and more particularly to such a breaching bubble having a bursting detonator that initiates the breaching.

BACKGROUND

Heretofore, U.S. Pat. No. 6,726,364 to Perell et al teaches a storage package with a band seal formed by opposed laminae enclosing a breaching bubble. The band seal has an inner seal between the bubble and the interior of the package, and an outer seal between the bubble and the edge of the package. The bubble may be expanded by external pressure applied to the bubble by the user. The expansion separates the opposed laminae causing the bubble to breach along the edge. Opposed peel flaps form along the edge breach by the separation of the opposed laminae of the outer seal. These small initial flaps are grasped by the user and manually peeled apart to separate the remainder of the outer seal and the inner seal, and open the package.

SUMMARY

It is therefore an object of this invention to provide an access structure with a bursting detonator within the breaching bubble. Pressure on the bursting fluid within the detonator causes the detonator wall to rupture, initiating the breaching of the bubble. The rupture communicates the high fluid pressure within the bursting detonator into the bubble. This step change in internal bubble pressure urges the laminae toward separation, causing the bubble to edge breach.

It is a further object of this invention to provide such a bursting detonator which ruptures almost instantaneously causing a rapid, sudden and energetic edge breach. As the user presses on the bubble and detonator therein, compression energy builds in the bursting fluid. The external mechanical energy provided by the user, is transformed into internal compression energy. The compression continues to build until released by rupture into the bubble. The bulk of this accumulated energy is instantaneously transferred at burst into the breaching bubble causing the bubble to expand and breech. The slow energy introduction by the user over the entire period of pressing, is released in an instant as an intense pressure pulse.

It is a further object of this invention to provide such a bursting detonator having uniform rupture threshold. That is, the detonators in each package are generally the same size, shape, and wall thickness, and made of the same material.

These mass manufactured detonators rupture at about the same fluid pressure. The user's package opening technique is simplified. He merely applies the same pressure at same place in the same manner.

It is a further object of this invention to provide such a bursting detonator with a bursting tract for providing a sponsored rupture. The bursting tract is scored or otherwise weakened, in order to promote rupture.

It is a further object of this invention to provide such a bursting detonator which produces a uniform sound upon bursting.

It is a further object of this invention to provide such a bursting detonator as an inner container for items accompanying the product within the sealed interior. Manufacturers frequently provide product accessories and utensils which are not in the sealed interior with the product, such as prizes and instructions. These items may be included in the bursting detonator.

It is a further object of this invention to provide an access structure with multiple bursting detonators.

Briefly, these and other objects of the present invention are accomplished by providing a breaching access structure having an access region proximate a breaching edge. The structure has a band seal extending thereacross containing a breaching bubble. The band seal has an outer seal portion between the breaching bubble and the branching edge, and an inner seal portion between the breaching bubble and a sealed interior. A bursting detonator proximate the breaching bubble contains bursting fluid. The detonator bursts in response to applied pressure for establishing fluid communication from the detonator to the breaching bubble. The detonator pressure causes the breaching bubble to breach for facilitating opening the inner seal portion providing access to the interior.

BRIEF DESCRIPTION OF THE DRAWINGS

Further objects and advantages of the access structure having a breaching bubble and bursting detonator, will become apparent from the following detailed description and drawings (not drawn to scale) in which:

FIG. **1**A is a side view of storage package **10** showing stored contents **10**C and breaching bubble **16** and bursting detonator **18**;

FIG. **1**B is a end view of package **10** of FIG. **1**A;

FIG. **1**C is a side view of package **10** showing detonator **18** bursting into bubble **16** due to applied pressure at point "X";

FIG. **1**D is a end view of package **10** of FIG. **1**C;

FIG. **1**E is a side view of package **10** showing bubble **16** forming edge breach **16**B;

FIG. **1**F is a end view of package **10** of FIG. **1**E;

FIG. **1**G is a side view of package **10** showing peel flaps **16**U and **16**L being peeled back to open sealed member **10**I;

FIG. **1**H is a end view of package **10** of FIG. **1**G;

FIG. **2** is a sectional view of a convex package **20**;

FIG. **3** is a sectional view of a planar package **30**;

FIG. **4** is a side view of binary bursting detonator **38** within package **40**;

FIG. **5** is a top view of package **50** showing multiple bursting detonators **58** each with a bursting tract **58**T; and

FIG. **6** is a top view of package **60** showing multiple breaching bubbles **66** with bursting detonators **68**.

The first digit of each reference numeral in the above figures indicates the figure in which an element or feature is most

prominently shown. The second digit indicates related elements or features, and a final letter (when used) indicates a sub-portion of an element or feature.

REFERENCE NUMERALS IN DRAWINGS

The table below lists the reference numerals employed in the figures, and identifies the element designated by each numeral.

Storage Package **10**
10C Contents **10**C
10I Sealed interior **10**I
10S Breaching Access Structure **10**S
12A Access Region **12**A
12E Breaching Edge **12**E
14 Band Seal **14**
14I Inner Seal Portion **14**I
14L Lower Lamina **14**L
14O Outer Seal Portion **14**O
14U Upper Lamina **14**U
16 Breaching Bubble **16**
16B Edge Breach **16**B
16F Separation Frontier **16**F
16L Lower Peel Flap **16**L
16U Upper Peal Flap **16**U
18 Bursting Detonator **18**
18A Anchor Site **18**A
18F Bursting Fluid **18**F
20I Sealed interior **20**I
24I Inner Seal Portion **24**I
24L Curved Lower Lamina **24**L
20O Outer Seal Portion **24**O
24U Curved Upper Lamina **24**U
26 Breaching Bubble **26**
28 Bursting Detonator **28**
28P Product Item **28**P
34F Frangible End of Middle Lamina **34**F
34L Flat Base Lower Lamina **34**L
34M Partial Middle Lamina **34**M
34P Pinned End of Middle Lamina **34**P
34S Seal of Middle Lamina **34**S
34U Curved Cover Upper Lamina **34**U
36 Breaching Bubble **36**
38 Bursting Detonator **38**
42E Breaching Edge **42**E
46 Breaching Bubble **46**
44L Lower Lamina **44**L
44U Upper Lamina **44**U
48 Binary Detonator Capsule **48**
48F First Chamber **48**F
48S Second Chamber **48**S
50 Storage Package **50**
56 Breaching Bubble **56**
58 Bursting Detonator **58**
58T Bursting Tract **58**T
60 Storage Package **60**
66 Breaching Bubble **66**
68 Bursting Detonator **68**
60I Sealed interior **60**I
60S Access Structure **60**S

General Embodiment—(FIG. **1**A-H)

Breaching access structure **10**S provides easy access to contents **10**C of sealed interior **10**I of storage package **10** through breaching edge **12**E which extends along the edge of the access structure. The package is formed by enclosure material, which may be any suitable confining substance such as films, plastics, paper (with wood and/or cotton content) fabric, cellophane, or biodegradable matter. Thin mylar plastic forms a flexible film with hermetic properties, and is commonly used as a enclosure material for packages. Contents **10**C may be any tangible object such as snacks, candies, prepared foods, edible generally, agricultural commodities, pharmaceuticals, sterile supplies and instruments, manufactured products, or sundry household goods.

Access regions **12**A is within the access structure proximate breaching edge **12**E, and provides entrance into the sealed interior and access to the contents. Band seal **14** extends across the access region and is formed by opposed laminae of enclosure material. The band seal has upper lamina **14**U and lower lamina **14**I, pressed into a sealing engagement. Breaching bubble **16** is enclosed between the opposed laminae within the band seal. The band seal has inner seal portion **14**I and outer seal portion **14**O, both formed by the opposed laminae material. The inner seal portion is between the breaching bubble and the sealed interior. The outer seal portion is between the bubble and breaching edge **12**E of the access region. The opposed laminae forming the band seal and the seal portions therein, may be pressed into a sealing engagement, trapping breaching bubble **16** therebetween. The sealing engagement may be frangible, forming a seal which is easily broken without destruction. Such frangible seals may be formed under controlled pressure and temperature and time conditions. A additional details of a suitable access structure are disclosed in U.S. Pat. No. 6,726,364 issued on 27 Apr. 2004 to Perell et al, the subject matter of which is hereby incorporated by reference in its entirety into this disclosure.

Bursting detonator **18** proximate breaching bubble **16**, contains bursting fluid **18**F. The detonator bursts in response to fluid pressure (either external see FIG. **1**B, or internal see FIG. **4**) for establishing fluid communication from the detonator to the breaching bubble. The fluid pressure within the detonator is communicated into the breaching bubble, initiating bubble expansion and laminae separation and breaching along breaching edge **12**E. The bursting detonator is preferably inside the breaching bubble, and anchored to the inside surface of the breaching bubble. The bursted detonator is shown in FIGS. **1**A **1**C and **1**E at various stages in the opening of the sealed interior. Detonator **18** is shown before bursting in FIG. **1**A, during bursting in FIG. **1**C, and after bubble breach in FIG. **1**E. Anchor site **18**A for detonator **18** is shown in FIGS. **1**B **1**D and **1**F at these various stages. The anchored detonator is firmly fixed at the anchor site, and does not slip around within the breaching bubble during bursting. After breach, the bursted detonator stays attached to the lamina, where it cannot be swallowed by an infant or dropped as litter. The bursting detonator may be formed of a stretchable material such as a low density polyethylene, which thins as the detonator spreads-out and flattens or deforms under the fluid pressure. At a critical thinness, the detonator material ruptures along a tear causing the bursting.

Opening the Band Seal

Breaching bubble **16** expands towards breaching edge **12**E of the access structure (see FIG. **1**C) in response to the fluid pressure released by bursting detonator **18**. The bubble is larger than the detonator providing an spreading zone within bubble for the detonator to spread-out, and thin and burst. In the embodiment shown in FIG. **1**A-H, the bursting is accomplished by external pressure applied by the user.

The user may direct the bubble expansion outward towards edge **12**E of the package by applying the external pressure along the inward side of the detonator proximate point "X" (see FIG. **1**C). Inward expansion of the bubble towards inner seal **14**I is limited, because the applied external pressure keeps the opposed laminae pressed together in sealing engagement along the inward side. Therefore, expansion due to the directed pressure is primarily outward towards outer seal **14**O, and urges the bubble expansion outward towards the edge of the package, as indicated by the large outward arrow.

The outward bubble expansion progressively separates the outer seal laminae along a moving separation frontier **16**F. The frontier moves across the outer seal until the frontier reaches the edge of the package, where the bubble breaches creating edge breach **16**B (see FIG. **1**E and FIG. **1**F). The outer seal may be a frangible seal, suitable for breaching. Minor leakage of bubble air or fluid during the shelf life of the package may be tolerated. The bursting pressure from the detonator having burst compensates for the leakage. The pre-bursting pressure applied to the bursting detonator also causes pressure in the surrounding breaching bubble. During this short pre-burst stage, the bubble becomes taut and firm, and primed against the separation frontier. The bubble may expand and the separation proceed, in response to both the detonator bursting and the pre-bursting pressure in the bubble.

Opposed Peel Flaps

Opposed pair of peel flaps, under flap **16**U and lower flap **16**L (see FIG. **1**E), are formed by the separated opposed laminae of the outer seal along the edge breach as the bubble breaches. These small initial flaps are grasped by the user and manually peeled apart, further separating the opposed laminae in order to initiate opening the inner band seal providing access to the interior. The opposed laminae material forming the bubble and the outer seal may stretch slightly under the bursting pressure and bubble expansion. Enclosure material of a stretching plastic type such as mylar provides loose or baggy initial peel flaps (see FIG. **1**F). The looseness offers the user more gripping material to start peeling the flaps apart.

The initial peel flaps formed along the edge breach become larger in area as the user peels the flaps apart (see FIG. **1**G and FIG. **1**H). This enlarged area first includes some of the opposed laminae material forming the outer seal. As the flaps are peeled further apart, the enlargement includes some of the opposed laminae material forming the bubble, and then some of the material forming the inner seal. This enlarged flap area offers the user an even more material to grip as the laminae separation proceeds. The uniform, page-like peeling shown in FIG. **1**G illustrates ideal separation of the laminae. The actual peeling may be uneven, irregular, or askew. The opposed laminae material forming the inner seal may be resealable to permit resealing the interior after the band seal has been opened.

The bubble expands under the pressure both outward towards edge **12**E of the access structure and laterally, as indicated by the small lateral arrows (see FIG. **1**C). The lateral expansion provides a laterally expanded edge breach with laterally expanded peel flaps. Instead of the directed pressure shown in FIG. **1**C, the user may press the detonator closer to the center of the bubble, causing the bubble to expand in all directions. The bubble may expand under the pressure both outward towards the edge and inward towards the inner seal.

Convex Embodiment—(FIG. **2**)

One or both of the opposed laminae may be generally convex, such as curved lower lamina **24**L and curved upper lamina **24**U (see FIG. **2**). The opposed laminae may be pressed together along the edges, and along the band seal to form outer seal **24**O and inner seal **24**I. The space between the curved lamina and within the pressed edges defines breaching bubble **26** and sealed interior **20**I. Bursting detonator **28** (shown in bold line) may completely fill the breaching bubble. Alternatively, as shown in FIGS. **1**A-H, bursting detonator **18** only partially fills breaching bubble **16**.

Product Items

The bursting detonator or the breaching bubble may contain small, useful product items, such as tokens, coupons, candy, utensils, fragrances, etc. Item **28**P may be product information such as instructions, manufacturing data, and use-by-date, expressed in various formats, such as print, bar codes and graphics. The information may be carried on various mediums such, paper and memory chips, and even on CDs. The product item may be a status indicator, to indicate such conditions as whether:

1) The contents have been stored at a temperature outside a critical range. That is, the stage environment was temporarily too warm or too cold.
2) The contents have been exposed to the ambient, and degraded by oxygen. The contents are no longer fresh.
3) The package or seal has been damaged, degraded or tampered with.
4) The use-by-date of the contents has expired.

Planar Embodiment—(FIG. **3**)

One of the opposed laminae may be generally planar, such as flat base **34**L. The other opposed lamina may be generally convex, such as curved cover **34**U. The flat base provides a moving assembly platform during manufacturing, which then receives the other components of the storage package. Bursting detonator **38** may be anchored to the flat base prior to mounting the curved cover. In addition, the flat base may receive a partial lamina film forming the detonator. Partial middle lamina **34**M, between the opposed laminae, extends into breach bubble **36** to form bursting detonator **38**. Pinned end **34**P of middle lamina **34**M is pinned between upper lamina **34**U and lower lamina **34**L. Frangible end **34**F within the bubble is secured only to the lower lamina forming frangible detonator seal **34**S. Lamina detonator **38** expands under pressure causing the middle lamina to separate from the lower lamina and edge breach into the bubble along the detonator seal.

Detonator Fluid

The bursting fluid contained within the bursting detonator may be any suitable compressible gas. Inert and chemically pure gases, such as nitrogen gas are preferred. Low cost ambient air may be employed as the bursting fluid. Preferably, the air is filtered to remove harmful particulate matter, such as pathogens, dust, and allergens. Alternatively, the bursting fluid may be any suitable incompressible liquid such as water or solvent. The bursting fluid may be a low-temperature gel substance which remains plastic and malleable at freezer temperatures. Frozen food packages taken right out of the freezer, may be opened immediately by bursting such a gel detonator.

Fluid substances with a low coefficient of thermal expansion may be employed. These substances exhibit less contraction or expansion as the temperature changes. Because of the lower shrinkage, the detonator remains firmer at lower temperatures. Such a firm detonator has a crisp, more reliable response to fluid pressure. In addition, low coefficient

substances exhibit less expansion at higher temperatures, which may force the detonator into an untimely burst.

Internal Pressure—(FIG. **4**)

In the embodiment of FIG. **1**, the pressure which bursts the detonator is external pressure applied manually by the user. In other embodiments, the pressure for bursting the detonator may be internal gas pressure created within the detonated by chemically active reagents. Binary detonating capsule **48** contains a first reagent such as liquid vinegar in firs chamber **48**F, and a second reagent such as baking soda powder in second chamber **48**S. The capsule is formed of a rigid, fragile material, which and may be fractured or crushed under the fluid pressure or mechanical bending, generated by distorting breaching bubble **46**. The reagents come into contact and react, generating an expanding volume of gas, which in the vinegar/soda example is carbon dioxide. The internal gas pressure causes opposed laminae **44**L and **44**U to separate and breach along edge **42**E. This internal expansion may be assisted by a cooperating external pressure applied by the user. In this cooperating case, the presence of the internal pressure reduces the external pressure required. In the capsule embodiment of FIG. **4**, the bursting detonator is loose inside the breaching bubble, and may be retrieved from the breaching bubble after breach. This loose detonator embodiment does not require the manufacturing step of anchoring the detonator, and the detonator is free to move around within the bubble.

Multiple Bubbles/Detonators—(FIGS. **5** and **6**)

The breaching access structure may have multiple breaching bubbles, each with one or more bursting detonator. Breaching bubble **56** on storage package **50** contains more than one bursting detonator **58**. If one of the detonators fails, the other detonator is available as a back-up. Access structure **60**S on storage package **60** has multiple breaching bubbles **66**, each with a detonator **66**. One breaching bubble with an inner seal and an outer seal is positioned at one end of sealed interior **60**I. Another breaching bubble with an inner seal and an outer seal is positioned at the other end of the sealed interior. The sealed interior may be opened from either end.

Bursting Tract—(FIG. **5**)

The bursting detonator may have a bursting tract defined in the material of the detonator for providing a sponsored rupture of the detonator at the tract. The sponsored rupture may have a lower rupture threshold than the remainder of the detonator, increasing the probability that the rupture will occur within the tract. The material forming the tract may be more fragile and/or thinner than the material forming the remainder of the detonator, and therefore more prone to breaking or splitting. The material forming the fragile tract may be chemically treated to become more brittle, or otherwise damaged or flawed.

The thinner tract may be a score in the surface of the detonator. Various embodiments of scored bursting tracts **58**T within bursting detonators **58**, are shown in FIG. **5**. The score may be a simple line score inscribed on the detonator by a spot laser beam. For example, a bursting detonator having a 1.5 mil wall thickness may be reduced to the wall thickness to 1 mil along the score by employing a low power laser beam having a diameter of about one half a human hair. The score may be an angular score such as an acute angle or an "X" or a triangle, defining a high stress rupture point at the vertex. Alternatively, the score may be a closed loop score such as a circle or an oval. The direction of the sponsored rupture may be controlled to promote the edge breach of the breaching bubble. The detonator may be orientated to position the score adjacent to the edge breach location, causing most of the energy of the rupture to be applied to separating the opposed laminae. The sponsored conditions of the rupture establish a more predictable bursting, resulting in a more uniform sound created by the rush of breaching fluid.

CONCLUSION

It will be apparent to those skilled in the art that the objects of this invention have been achieved as described hereinbefore by providing a bursting detonator within a breaching access structure. Various changes may be made in the structure and embodiments shown herein without departing from the concept of the invention. Further, features of embodiments shown in various figures may be employed in combination with embodiments shown in other figures. Therefore, the scope of the invention is to be determined by the terminology of the following claims and the legal equivalents thereof.

I claim:

1. A breaching access structure for providing easy access to the contents of a sealed interior, comprising:

breaching edge along the edge of the access structure;

access region within the access structure proximate a breaching edge;

band seal extending across the access region;

breaching bubble within the band seal;

outer seal portion of the band seal, between the breaching bubble and the breaching edge of the access structure;

inner seal portion of the band seal, between the breaching bubble and the sealed interior; and

bursting detonator containing bursting fluid proximate the breaching bubble, which detonator bursts in response to applied pressure for establishing fluid communication from the detonator to the breaching bubble, causing the breaching bubble to breach for facilitating opening the inner seal portion providing access to the interior.

2. The access structure of claim **1**, wherein the bursting detonator is inside the breaching bubble.

3. The access structure of claim **2**, wherein the bursting detonator is anchored inside the breaching bubble.

4. The access structure of claim **3**, wherein the bursting detonator is retrievable from inside the breaching bubble after breach.

5. The access structure of claim **2**, wherein the bursting detonator completely fills the breaching bubble.

6. The access structure of claim **2**, wherein the bursting detonator partially fills the breaching bubble.

7. The access structure of claim **2**, wherein the bursting detonator is loose inside the breaching bubble.

8. The access structure of claim **7**, wherein the bursting detonator is retrievable from inside the breaching bubble after breach.

9. The access structure of claim **1**, wherein the bursting detonator is formed on a stretchable material which bursts by thinning under the applied pressure.

10. The access structure of claim **1**, wherein the bursting detonator is formed of a rigid material which bursts by fracturing under the applied pressure.

11. The access structure of claim **1**, wherein the applied pressure for bursting the detonator is external pressure.

12. The access structure of claim **1**, wherein the applied pressure for bursting the detonator is created within the detonator by chemically active reagents.

13. The access structure of claim 1, wherein the bursting fluid is a gas.

14. The access structure of claim 13, wherein the bursting fluid is nitrogen gas.

15. The access structure of claim 13, wherein the bursting fluid is ambient air.

16. The access structure of claim 13, wherein the bursting fluid is a liquid.

17. The access structure of claim 13, wherein the bursting fluid is a gel substance which remains malleable at low temperatures.

18. The access structure of claim 1, further comprising an item contained in the bursting detonator.

19. The access structure of claim 18, wherein the item contained in the bursting detonator is information.

20. The access structure of claim 18, wherein the item contained in the bursting detonator is a status indicator.

21. The access structure of claim 1, wherein the breaching bubble contains more than one bursting detonator.

22. The access structure of claim 1, wherein the breaching bubble is multiple breaching bubbles.

23. The access structure of claim 22, wherein a breaching bubble with an inner seal and an outer seal is positioned at one end of the sealed interior, and another breaching bubble with an inner seal and an outer seal is positioned at the other end of the sealed interior.

24. A breaching access structure for providing easy access to the contents of a sealed interior, comprising:

breaching edge along the edge of the access structure;

access region within the access structure proximate a breaching edge;

band seal extending across the access region;

breaching bubble within the band seal;

outer seal portion of the band seal, between the breaching bubble and the breaching edge of the access structure;

inner seal portion of the band seal, between the breaching bubble and the sealed interior;

bursting detonator containing bursting fluid proximate the breaching bubble, which detonator bursts in response to applied pressure for establishing fluid communication from the detonator to the breaching bubble, causing the breaching bubble to breach for facilitating opening the inner seal portion providing access to the interior; and

a bursting tract defined in the material of the bursting detonator for providing a sponsored rupture of the detonator at the tract.

25. The access structure of claim 24, wherein the sponsored rupture at the tract is directional.

26. The access structure of claim 24, wherein the sponsored rupture at the tract has a lower rupture threshold than the remainder of the detonator.

27. The access structure of claim 24, wherein the tract is more fragile than the remainder of the detonator.

28. The access structure of claim 27, wherein the material forming the fragile tract is a thinner than the material forming the remainder of the bursting detonator.

29. The access structure of claim 28, wherein the thinner tract is a score in the surface of the detonator.

30. The access structure of claim 29, wherein the score is a laser score.

31. The access structure of claim 29, wherein the score is a line score.

32. The access structure of claim 29, wherein the score is an angle score defining a high stress point at the vertex.

33. The access structure of claim 29, wherein the score is a closed loop score.

34. A breaching access structure for providing easy access to the contents of a sealed interior, comprising:

breaching edge along the edge of the access structure;

access region within the access structure proximate a breaching edge;

band seal extending across the access region;

breaching bubble within the band seal;

outer seal portion of the band seal, between the breaching bubble and the breaching edge of the access structure;

inner seal portion of the band seal, between the breaching bubble and the sealed interior;

the band seal and the outer seal portion and inner seal portion are formed by opposed laminae of flexible material pressed into a sealing engagement, and the breaching bubble is between the opposed laminae; and

bursting detonator containing bursting fluid proximate the breaching bubble, which detonator bursts in response to applied pressure for establishing fluid communication from the detonator to the breaching bubble, causing the breaching bubble to breach for facilitating opening the inner seal portion providing access to the interior.

35. The access structure of claim 34, wherein the sealing engagement is a frangible.

36. The access structure of claim 34, wherein the breaching bubble expands towards the breaching edge of the access structure in response to the detonator bursting, and separates the opposed laminae along the outer seal causing the breaching bubble to breach.

37. The access structure of claim 34, wherein the breaching bubble expands towards the breaching edge of the access structure in response to the applied pressure and detonator bursting, and separates the opposed laminae along the outer seal causing the breaching bubble to breach.

38. The access structure of claim 37, further comprising opposed peel flaps formed by the separated opposed laminae, which may be peeled apart further separating the opposed laminae to open the inner band seal providing access to the interior.

39. The access structure of claim 34, wherein one of the opposed laminate is generally planar.

40. The access structure of claim 39, wherein the bursting detonator is anchored to the planar lamina.

41. The access structure of claim 34, wherein at least one of the opposed laminae is convex.

42. The access structure of claim 34, further comprising a partial middle laminae between the opposed laminae, which forms the bursting detonator within the breaching bubble.

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