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(71) Applicant *(for all designated States except US)*: **BILCARE LIMITED** [IN/IN]; 601 ICC Trade Tower, Senapati Bapat Road, Pune 411 016 (IN).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **NAIK, Praful, Ramachandra** [IN/IN]; Shri R.G. Naik, Santrupti, Prabhat Nagar, Vadageri, Honavar 581 334, Uttara Kanada, Karnataka (IN). **MANDALE, Avinash, Shantaram** [IN/IN]; C6-604 Lake Town, Chitraban, Near State Bank Colony, Bidewadi, Pune 411 037 (IN). **BHOOSHAN, Urja, Kulkarni** [IN/IN]; E-4, Shweta Co.Op.Hsg. Soc., Sinhgad Road, Pune 411 030 (IN).

(74) Agent: **GANGULI, Prabuddha**; 101-201 Sun View Heights, Plot N°262, Sher-e-Punjab, Andheri East, Mumbai 400 093 (IN).

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[Continued on next page]

(54) Title: SINGLE PIECE RE-CLOSABLE UNIT PACK

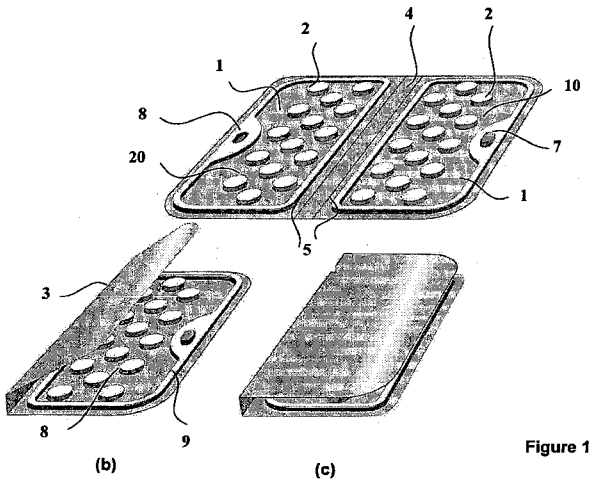

Figure 1

(57) Abstract: The present invention relates to a one piece re-closable unit pack comprising a first layered structure (1) wherein one or plurality of containment(s) (2) are formed to contain product(s) wherein the said containment(s) (2) up stand from first surface of the said first layered structure (1) thereby creating one or plurality of corresponding opening/s on the second surface of the said first layered structure, a second layered structure (3) affixed to the unformed region of the second surface of the first layered structure (1) wherein portion of the second layered structure (3) corresponding to the opening of the containment(s) (2) is ruptured to remove the product, at least one portion (10) comprising the containment(s) (2) wherein the region (4) between the said portions (10, 20) is foldable; optionally one or plurality of unformed portion/s, optionally constructed to provide child resistant capability and / or unique identifiers to authenticate a packaged product.

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Single piece re-closable unit pack

Field of the Invention

The present invention relates to a one piece re-closable unit pack such as blister pack and method of manufacturing the same. Further the said re-closable and lockable blister pack is optionally constructed to provide child resistant capability and / or unique identifiers to aid in establishing the authenticity and genuineness of a packaged product.

Background of the invention

Packs such as blister packs that comprises of one or plurality of deformable protrusions formed in a flexible sheet with a closure for each of the protrusions are primarily but not exclusively used to packaged in products such as medicaments. Products in blister packs are either sold as such or are generally encased in a container for extra protection during transportation and handling. The container serves multiple purposes like providing protection to the blister pack (s), serve as a substrate to display product information and /or usage instructions, lockable provisions to serve as child resistant packs, etc.. Further, establishing the authenticity and genuineness of a packaged product is essential as counterfeited products when consumed can cause grave harm to the end users.

United States Patent 5954202 discloses a Paperboard blank for a self-contained, reclosable package. It relates to paperboard blanks which are used to form self-contained, reclosable packages. Structures of this type, generally, are comprised of one piece of paperboard that when folded act as an outer package when sealed and an innovative reclosable package after being opened.

United States Patent 6047829 discloses a unit dose packaging system (UDPS) having a child resistant locking feature. The invention relates to a two piece paperboard package that houses a unit dose product on an internal slide card within an outer paperboard shell. This package may have one or more internal or external lock(s) that prevent the slide card from being pulled out without triggering some type of lock release mechanism. This package is focused around providing

a child resistant, senior-friendly unit dose package that can be opened and closed numerous times and then finally disposed of.

There is an unfulfilled need in the market place for single piece re-closable packages especially blister packs that do not need additional encasing systems and are yet capable of being child resistant. Additionally, many clinical indications require the patient to take limited dosages and hence the packaging must be tailored to meet such a need so as to ensure patient compliance and also avoid wastage of the medicines, yet has the capability of being re-closable and also eliminating the need of additional carton / closure to encase / house the pack along with optional child resistant characteristics. Further, it is desirable to provide such single piece re-closable child resistant packs with unique identifiers to aid in establishing the authenticity and genuineness of a packaged product and for diverse applications including anticounterfeiting, pharmaco-vigilence in clinical trials, enhancing patience compliance, etc.

Summary of the Invention

The main object of the invention is to provide a single piece re-closable unit pack such as blister pack and method of manufacturing the same.

Yet another object of the invention is to provide a single piece re-closable unit pack such as a blister pack that requires the patient to take limited dosages to ensure patient compliance and also avoid wastage of the medicines

Further object of the invention is to provide a unit pack such that the portions of the same portions are held together when folded.

Other object of the invention is to provide a child safe yet senior friendly unit pack with a self enclosing / re-closing capability that eliminates the need of additional carton / closure to encase / house the pack for enabling / rendering child resistant characteristics.

Yet another object of the invention is to provide child resistant characteristics in a blister pack without using additional housing / enclosure / carton.

Another object of the invention is to provide a system and method of manufacturing the child resistant blister pack.

Yet another object of the invention is to use preferably same material of the blister for rendering child resistant characteristics.

Another object of the invention is to provide a uniquely identifiable package.

Yet another object of the invention is to provide at least two sets of identification information on the product package.

Another object of the invention is to detect and record access of the product package from the closure and communicate to the external device.

Another object of the invention is to enhance visibility of graphics / matter on the closure of the blister pack to the end user.

Yet another object of the invention is to optimally utilize unit pack for displaying graphics / matter / information related to the product / unit pack.

Thus one aspect of the invention provides a unit pack comprising:
A single piece re-closable unit pack comprising
a first layered structure wherein one or plurality of containment(s) are formed to contain product(s) wherein the said containment(s) up stand from first surface of the said first layered structure thereby creating one or plurality of corresponding opening/s on the second surface of the said first layered structure,
a second layered structure affixed to the unformed region of the second surface of the first layered structure
wherein portion of the second layered structure corresponding to the opening of the containment(s) is ruptured to remove the product,

at least two portions comprising the containment(s) wherein the region between the said portions is foldable;
optionally one or plurality of unformed portion/s;
wherein the said containment(s) of each of the said portions are disposed such that upon folding the said portions, containment(s) do not overlap;

engaging and corresponding receiving provision disposed on the said portion/s such that the said portions are held together when folded.

In another aspect of the invention there is provided a single piece re-closable unit pack comprising
a first layered structure wherein one or plurality of containment(s) are formed to contain product(s) wherein the said containment(s) up stand from first surface of the said first layered structure thereby creating one or plurality of corresponding opening/s on the second surface of the said first layered structure,
a second layered structure affixed to the unformed region of the second surface of the first layered structure
wherein portion of the second layered structure corresponding to the opening of the containment(s) is ruptured to remove the product,
single portion comprising the containment(s) and at least one unformed portion wherein the region between the said portions is foldable;
engaging and corresponding receiving provision disposed on the said portion/s such that the said portions are held together when folded.

In another aspect of the invention a reader device is provided to identify and read the unique identification information on the said package.

In another aspect of the invention a reader means is provided to identify and read the unique identification information on the said package wherein the reader means is suitably able to detect the identification information relating to the product package and conveys the information or generates a signal in response to the information which is communicable to the external device. Suitably, the information is encoded and preferably is optical, electronic or magnetic wherein the reader means comprises of

one or more reading elements arranged to correspond to the position of each set of identification information on the package for reading the at least two sets of identification information;

wherein the said reader means is adapted to read a signal from the at least one identification feature of each of the at least two sets of identification information arranged on or incorporated within different surfaces, sides or planes of the package, and wherein the reading device is configured such that it defines the spatial relationship between a first discrete area of the first set of identification information to be read and a second discrete area of the second set of identification information to be read, and determining, using the reading device, at least one characteristic of a property of the at least one identification feature of the first set of identification features, thereby obtaining a first signal, determining, using the reading device, at least one characteristic of a property of the at least one identification feature of the second set of identification features, thereby obtaining a second signal, using a processing unit to derive/form/generate at least one signature for the object, using said first and said second signals (and thereby inherently or explicitly the features' spatial relationship).

Description of the Invention

Features and advantages of the invention will become apparent in the following detailed description and the preferred embodiments with reference to the accompanying drawings.

Figure 1 Schematic of the package (Sheet 1)

Figure 2 Schematic of the package (Sheet 2---Fig1 of patent of addition)

Figure 3 Schematic of the package (Sheet 3)

Figure 4 Schematic of the package (Sheet 4-Fig 2 of patent of addition)

Figure 5 Schematic view of the package (Sheet 5)

Figure 6 Schematic view of the package (Sheet 6)

Figure 7 Schematic view of the package (Sheet 7)

Figure8 Schematic view of the package (Sheet 8)

Figure 9 Schematic view of the package (Sheet 9)

Figure 10 Schematic view of the package (Sheet 10)

Figure 11 Schematic view of the package (Sheet 11)

Figure12 Schematic view of the package (Sheet 12)

Figure 13 Schematic view of the package (Sheet 13)

Figure 14 Schematic view of the package (Sheet 14)

One of the embodiments of the packs is depicted in **Figure 1**. It comprises of a first layered structure **1** in the form of a mono or multi layered structure in which one or plurality of enclosed spaces containment(s) **2** are formed to contain the product(s) wherein the said containment(s) up stand from first surface of the said first layered structure defining one or plurality of corresponding opening/s in a second surface of the said first layered structure (not shown). The pack further comprises of a second rupturable layered structure **3** (closure) that encloses the said containment(s) wherein portion of the enclosing lamina corresponding / superimposed to the containment(s) portion is ruptured/ removed while removing the product wherein the said layered structure is secured / bonded / affixed / attached to the unformed portion of the second surface of the first layered structure to enclose the said openings to seal the products in the upstanding containment(s). A unformed portion / region **4** is disposed between the portions indicated as **10** and **20** where cluster of containment(s) portion of the formed cavities wherein the said portion **4** is adapted for fold/ to facilitate fold along the lines indicated as **5** of the first and second layered structure such that the portions **10** and **20** are laid down / overlay on each other upon folding as shown in the figure. The containment(s) are disposed in a manner on the said formed portions such that upon folding they do not overlap and are interspaced between each other so containment(s) of a portion **10** is placed in the space between the two capsules of portions **20**. To hold both the portions together when folded, an engaging provision is provided in the form of a raised region / projection **7** in the vicinity of the said portion **10** wherein corresponding to raised region / projection **7** is provided with a receiving provision in the form of a recesses **8** to removably receive **7** on the other portion **20** such that when folded 7 is pressfitted in the recesses **8** as shown in the **Figure 1c**. Optionally the boundary of the portions **10** and 20 are defined by stiffners in the form of formed portion indicated as **9** in **Figure 1(c).**

One of the embodiments of the packs, for the purpose of clinical conditions of patients needing limited doses, is depicted in Figure 2. It comprises of a first layered structure 1 in the form of a mono or multi layered structure in which one or plurality of enclosed spaces containment(s) 2 are formed to contain the product(s) wherein the said containment(s) up stand from first surface of the said first layered structure defining one or plurality of corresponding opening/s in a second surface of the said first layered structure (not shown). The pack further comprises of a second rupturable layered structure 3 (closure) (refer Figure 2(c)) that encloses the said containment(s) wherein portion of the enclosing lamina corresponding / superimposed to the containment(s) portion is ruptured/ removed while removing the product wherein the said layered structure is secured / bonded / affixed / attached to the unformed portion of the second surface of the first layered structure to enclose the said openings to seal the products in the upstanding containment(s). As shown in Figure 2(b), an unformed portion / region 4 is disposed between the portions indicated as 10 and 20 wherein the portion 20 comprises of cluster of containment(s) portion of the formed cavities wherein the said portion 4 is adapted for fold/ to facilitate fold such that the portions 10 and 20 are laid down / overlay on each other upon folding as shown in the Figure 2(c). (The provision of clusters in only one portion reduces multiple pass of the sheet through the forming machine This sentence as is in the Patent of Addition is not correct indication of forming of sheet with multiple portions each with blisters and problems of forming therein.)

To hold both the portions together when folded, an engaging provision is provided in the form of a raised region / projection 7 in the vicinity of the said portion 10 wherein corresponding to raised region / projection 7 is provided with a receiving provision in the form of a recesses 8 to removably receive 7 on the other portion 20 such that when folded 7 is press-fitted in the recesses 8. Optionally the boundary of the portions 10 and 20 are defined by stiffners in the form of formed portion indicated as 9 in Figure 2(c).

Another variant of this embodiment is depicted in **Figure 3** wherein engaging and corresponding receiving provision to hold the said portions together when folded is provided in the form of a stripe **80** that functions as engaging provision in addition to the means **7.** One of the ends of the said stripe is attached/ integrated

/ extended portion of (from) the said second layered structure from the region in the vicinity of the said recesses **8** as depicted in the Figure 3 (b). The said portion **20** is provided with a slot **90** to removably receive other end **85** of the stripe **80** that is adapted to pressfit in the said slot. The length of the said stripe **80** is such that upon folding said portion **20** on **10** as shown in Figure 3 (c), the said stripe wraps around the package and the end **85** is pressfitted in the said slot **90** as shown in the Figure 3(d). Further, upon folding the projection **7** also pressfits in the said recesses **8**. In operation, user has to release the end **85**, unwrap the said stripe and further release the said projection **7** from recess **8** with slight force to unfold the package and access product.

Yet another embodiment is depicted in Figure 4. As described in Figure 2, it comprises of a first layered structure 1 in which one or plurality of enclosed spaces containment(s) 2 are formed to contain the product(s) wherein the said containment(s) up stand from first surface of the said first layered structure defining one or plurality of corresponding opening/s in a second surface of the said first layered structure (not shown). The pack further comprises of a second layered structure 3 (closure) that encloses the said containment wherein portion of the enclosing layered structure corresponding / superimposed to the containment portion is ruptured/ removed while removing the product wherein the said second layered structure is secured / bonded / affixed / attached to the unformed portion of the second surface of the first layered structure to enclose the said openings to seal the products in the upstanding containment(s).

An unformed portion / region 4 is disposed between the portions indicated as portion 10 of cluster of containment(s) of the formed cavities and unformed portion indicated by 20 and between the unformed portions indicated by 20 and 30 wherein the said portion 4 is adapted for fold/ to facilitate fold such that the portions 10 and 20 and portions 10 and 30 are laid down / overlay on each other upon folding as shown in the Figure 4(b) and Figure 4(c) respectively. To hold both the portions together when folded, an engaging provision is provided in the form raised regions / projections 7 disposed along the periphery of the portion 30 wherein corresponding to raised regions / projections 7 is provided with a receiving provisions in the form of an opening 8 to removably receive 7 on the

other portion 10 such that when folded 7 is engaged in the opening 8 as shown in the Figure 4(c). The portions 10 and 20 are provided with stiffener provision 11 and 21 respectively along the periphery of the said portions as seen in Figure 4 (b). As shown in Figure 4(c) the unformed portion between the said portions 10 and 20 is folded so that the portion 10 overlays on the portion 20 to cover the containments of portion 10. Further the unformed portion between the said portions 20 and 30 is folded so as to overlay on the portion 10.

Yet another embodiment is depicted in **Figure 5**. As described in Figure 1, it comprises of a first layered structure **1** in which one or plurality of enclosed spaces containment(s) **2** are formed to contain the product(s) wherein the said containment(s) up stand from first surface of the said first layered structure defining one or plurality of corresponding opening/s in a second surface of the said first first layered structure (not shown). The pack further comprises of a second rupturable layered structure **3** (closure) that encloses the said containment wherein portion of the enclosing layered structure corresponding / superimposed to the containment portion is ruptured/ removed while removing the product wherein the said second layered structure is secured / bonded / affixed / attached to the unformed portion of the second surface of the first layered structure to enclose the said openings to seal the products in the upstanding containment(s). A unformed portion / region **4** is disposed between the portions indicated as **10** and **20** where cluster of containment(s) portion of the formed cavities wherein the said portion **4** is adapted for fold/ to facilitate fold such the portions **10** and **20** are laid down / overlay on each other upon folding as shown in the Figure 5(b). To hold both the portions together when folded, an engaging provision is provided in the form of a raised region / projection **36** in the vicinity of the said portion **20** wherein corresponding to raised region / projection **36** is provided with a receiving provision in the form of an opening **35** to removably receive **36** on the other portion **10** such that when folded **36** is engaged in the opening **35** as shown in the Figure 5d. The containment(s) are disposed in a manner on the said formed portions such that upon folding they are not overlapped and are interspaced between each other such that containment(s) of a portion **10** is placed in the space between the two containment(s) of portions **20**. Further, an extended unformed planer portion **25** is provided as an extension to

the portion **20** in the form of a lamina wherein cluster of containment(s) is not provided. The said extended planer portion is adapted to be folded along line **26** as shown in Figure 5(b). Further the said extended portion is provided with a engaging and receiving provision **30** that is removably pressfited in the slot **31** to engage the said extended portion. As shown in Figure 5(d) and (e), the planer portion of **10** overlays the planer portion **20** wherein the planer portion **25** overlays on the unformed portion, that is said second layered structure (closure) of planer portion **10** and the said provision **30** is inserted in the slot **31**. In operation, user has to release the end **30** of the said planer portion **25** from the said slot **31** followed by disengaging the said projection **36** from the opening **35** to access the product. **Figures 6, 7, 8** and **9** depicts variants of the invention and the engaging and receiving provisions used for holding the portions together when folded.

Another embodiment of the package is elaborated in **Figure10**. It comprises of a central triangular layered structure planer portion **80** provided with an opening **81** at one of the corners. Three layered structured planer triangular portions are disposed along the three edges of the said central portion **80**. The said three portions are integral part of the said central portion. The first planer portion **83** is foldably disposed such that the first layered structure (as described in Figure 1) in which one or plurality of containment(s) **84** are formed to contain the product(s) is in the same plane and upper surface side of the central planer portion **80** as indicated in **Figure 10.** Further, an engaging provision **85** is provided in the form of a projection the first planer portion **83**. The second triangular planer portion **86** is foldably disposed along the second edge of the said central portion **80** in such a manner that the enclosed spaces containment(s) upstand on the opposite face of the said central portion, that is the second repturable layered structure adjoins the upper surface of the said central portion **80**. Further, the third triangular planer portion **87** is foldably disposed along third edge of the said central planer portion **80.** This planer portion is provided with a receiving provision in the form of a slot **90** at the base and a engaging provision that is in the form of a stripe **91** provided at the apex as shown in the figure. In operation, the third planer portion **87** is foldaded such that it overlays on the said central portion 80 such that the containment(s) are on the upper surface as shown in **Figure 10(b)**. Further the first portion **83** is folded so as to overlay on the capsule side of the said third

planer portion as shown in Figure **10** (c). The containments of the portion **83** are disposed in a manner with respect to the containments of the said third portion **86** such that they are not overlapped and are disposed next to each other when **83** overlays on **86**. The said stripe **91** wraps around the three portions and fits in the slot **90** as shown in the **Figure 10(d) and 10(e).**

Figures 11, 12, 13 depict variants of the fold regions and variants of folds. The fold region comprises of foldable area and perforations/ scoring to facilitate the fold. As indicated in **Figure 11** the region **90** comprises of scoring and a foldable region wherein when folded the said region protrudes outwards in convex shape (indicated as **90**) as shown in **Figure 11 (b)**. **Figures 12** and **13** indicate variants of the fold region wherein a combination of scoring, perforations is used to facilitate fold.

Another aspect of the invention wherein the package is adapted to fit engaging and corresponding receiving provisions is shown in **Figure14**. An external engaging provision **120** is adapted to fit in the folding region. It comprises of a engaging provision in the form of a pressing means **121** operationally coupled with the receiving provision in the form of flaps **122** that are adapted to hold the layered structures of the package together as indicated in **Figure 14 (a)** The provision comprises of a engaging provision in the form of a press button / switch **121**. Upon pressing the said press button/ switch **121**, the flaps are raised resulting in disengagement of the two portions of the package as shown in the **Figure 14(b).**

In another embodiment a reader means is provided to identify and read the unique identification information on the said package wherein the reader means is suitably able to detect the identification information relating to the product package and conveys the information or generates a signal in response to the information which is communicable to the external device. Suitably, the information is encoded and preferably is optical, electronic, magnetic or a combination thereof.

In one of the embodiment of the package system, a uniquely identifiable information and /or combination of information is provided on the package.

In yet another embodiment product package is provided with an identification tag for identifying the package for authentication. The tag comprises at least two sets of identification information, said at least two sets of identification information comprising a first set of identification information and a second set of identification information each arranged within a different surface, side or plane of the identification tag, and identification features of said first set of identification information and identification features of said second set of identification information are arranged at a fixed relative spatial position with respect to each other, said fixed spatial relationship being used for identifying the package system.

In yet another embodiment the identifiers are present in a tag on the product package wherein one identifier comprises a readable layer of randomly distributed material which is capable of encoding identification information, for example a conductive material, magnetized or magnetisable material, semiconductive particle and optically active particles; the second identifier suitably comprises optical information, for example a 1-D or 2-D bar code.

In yet another embodiment at least two sets of identification information is provided on the product package and / or said layered structures. In another variant of this embodiment unique identifying information is suitably included on the package in the form of oriented or orientable particles and may relate to for example, the manufacturer of the package or to an individual. Preferably the identification information comprises information derived from a magnetic field and/or an electric field and optionally optical or magneto-optical information. In yet another variant of this embodiment nano / micro particulate materials and/or material composites with measurable material metrics are used on the package for identification information.

In a preferred embodiment, the product package suitably comprises a substantially non-magnetic host material having pores, wherein at least some of

the pores contain a substantially magnetic material which is codeable to encode identification information for identifying the product package or a unit dose package. The product package may comprise a substantially electrically-insulating host material having pores, wherein at least some of the pores contain a substantially electrically-conducting material which is codeable to encode identification information for identifying the unit dose package. Desirably, the electrically-conducting material is connectable to a voltage source.

In yet another embodiment the package system is provided with a means to detect disengagement of the engaging provision from the corresponding receiving provision of the package to monitor and /or record of package and /or product access from the package system. In another variant of this embodiment the package system is provided with a wired / wireless communication means capable of interacting with external / remote device/s.

In another embodiment a sensing means in the form of embedded system is adapted to fit on the said package system to detect disengagement of the engaging provision from the corresponding receiving provision of the package to monitor and /or record of package and /or product access from the package system. The said sensing means comprises of signal generating provision/s, data processing means, data logging and storing means configured with a communication means an optional communication switch, a power source, optional audio signal generating means, an oscillator (Real time clock) wherein the said signal generating means gets activated upon disengaging the said package from the package holding provision. The activation of the signal generating provision may be done by various means such as electronic, mechanical, optical, visual. In a specific embodiment, visual display and the audio signal generating means is provided to alert the user of the time and date of the products to be consumed and also provides quantitative information about the number of products in the package. As the user disengages the package from the closure a signal from the said signal generating provision is sent to the said data processing means wherein the time & date of product dispensed is logged into the data logging provision of the said data processing means. Using the optional

communication feature, the user may transfer the logged data to an external device by optionally embedded the communication switch.

In one of the variants said logged data in the said data processing is transferred / transmitted via communication means to an external device/s with the aid of RF wherein the said logged data to be transferred is superimposed on the RF field, generated by the RF circuit. In yet another variant of this embodiment the said logged data in the said data processing means is transferred / transmitted via communication means to the said external device/s using an IR link wherein the said logged data to be transferred is in the form of coded pulses or frequency. In yet another variant of this embodiment the said logged data in the said data processing means is transferred / transmitted via communication means to the said companion device through wired and / or any direct contact methods such as I2C, SPI, serial or parallel communication but not limited to these. In yet another variant of this embodiment the data is transferred using wireless communication means such as Bluetooth, Wi-Fi, Zeegbee, Wi-Max, GPRS, GSM, Wibree but not limited to it.

Thus it is evident from the present invention that the synergistic operational combination of the said package and combination of first layered structure in which one or plurality of enclosed spaces containment(s) are formed to contain the product(s) wherein the said containment(s) up stand from first surface of the said first layered struture defining one or plurality of corresponding opening/s in a second surface of the said first layered structure, second rupturable layered structure that encloses the said containment wherein portion of the enclosing layered structure corresponding / superimposed to the containment portion is ruptured/ removed while removing the product wherein the said second layered structure is secured / bonded / affixed / attached to the unformed portion of the second surface of the first layered structure (to enclose the said openings to seal the products in the upstanding containment(s)) along with a unformed portion / region disposed between the portion of the formed cavities wherein the said portion is adapted for fold/ to facilitate fold of the first and second layered structure provides self enclosing / re-closing capability that eliminates the need of additional

carton / closure to encase / house the pack providing provision for holding portions of the package along with optional child resistant characteristics.

What is claimed is:

1. A single piece re-closable unit pack comprising

a first layered structure wherein one or plurality of containment(s) are formed to contain product(s) wherein the said containment(s) up stand from first surface of the said first layered structure thereby creating one or plurality of corresponding opening/s on the second surface of the said first layered structure,

a second layered structure affixed to the unformed region of the second surface of the first layered structure

wherein portion of the second layered structure corresponding to the opening of the containment(s) is ruptured to remove the product,

at least one portion comprising the containment(s) wherein the region between the said portions is foldable;

optionally one or plurality of unformed portion/s;

engaging and corresponding receiving provision disposed on the said portion/s such that the said portions are held together when folded.

2. A single piece re-closable unit pack comprising

a first layered structure wherein one or plurality of containment(s) are formed to contain product(s) wherein the said containment(s) up stand from first surface of the said first layered structure thereby creating one or plurality of corresponding opening/s on the second surface of the said first layered structure,

a second layered structure affixed to the unformed region of the second surface of the first layered structure

wherein portion(s) of the second layered structure corresponding to the opening of the containment(s) is ruptured to remove the product,

at least two portions comprising the containment(s) wherein the region between the said portions is foldable;

optionally one or plurality of unformed portion/s

wherein the said containment(s) of each of the said portions are disposed such that upon folding the said portions, containment(s) do not overlap;

engaging and corresponding receiving provision disposed on the said portion/s such that the said portions are held together when folded.

3. A single piece re-closable unit pack as claimed in claim 1 comprising of a first layered structure in which one or plurality of enclosed spaces containment(s) are formed to contain the product(s) wherein the said containment(s) up stand from first surface of the said first layered structure defining one or plurality of corresponding opening/s in a second surface of the said first layered structure;.

a second layered structure that encloses the said containment wherein portion of the enclosing layered structure corresponding / superimposed to the containment portion is ruptured/ removed while removing the product wherein the said second layered structure is affixed to the unformed portion of the second surface of the first layered structure to enclose the said openings to seal the products in the upstanding containment(s);

an unformed portion / region that is disposed between the first, second and the third portion wherein the first portion comprises of cluster of containment(s) of the formed cavities and the said second and third portions are unformed ;

the region between the said three portions is adapted for fold/ to facilitate fold such that the said portions are laid down / overlay on each other upon folding;

an engaging provision provided in the form a raised regions / projections disposed along the periphery of the said third portion wherein corresponding to raised regions / projections there is provided a receiving provision in the form of an opening to removably receive the said projections on the first portion;

wherein the first and second portions are provided with stiffner provision along the periphery

wherein

the unformed region between the said first and second portion is folded so that the first portion overlays on the second portion to cover the containments of the said first portion, the unformed region between the

said portions second and third portion is folded so as to overlay on the first portion.

4 A single piece re-closable unit pack as claimed in claim 1-2 wherein the engaging and corresponding receiving provision is provided on the said first layered structure in the form of a raised region in the vicinity of the said containment(s) on one of the said portions wherein corresponding to raised region is provided with a receiving provision in the form of a recesses to removably receive the said raised region such that when folded the said raised region is pressfitted in the recesses.

5. A single piece re-closable unit pack as claimed in claims 1-4 wherein the boundary of the said portions is defined by a formed region bounding the containment (s) in the said first layered structure to function as stiffener.

6. A single piece re-closable unit pack as claimed in claims 1-5 wherein engaging provision is in the form of a stripe that is an extension of the first portion wherein the said strips one of the ends is in the vicinity of the said recesses as claimed in claim 4 wherein the said first portion is provided with a receiving provision in the form of a slot to removably receive other end of the said stripe that is adapted to pressfit in the said slot wherein the length of the said stripe is such that upon folding said portion on each other the said stripe wraps around the package and the said other end is pressfitted in the said slot.

7. A single piece re-closable unit pack as claimed in claims 1-6 comprising a first layered structure wherein one or plurality of containment(s) are formed to contain product(s) wherein the said containment(s) up stand from first surface of the said first layered structure thereby creating one or plurality of corresponding opening/s on the second surface of the said first layered structure,

a second layered structure affixed to the unformed region of the second surface of the first layered structure

wherein portion of the second layered structure corresponding to the opening of the containment(s) is ruptured to remove the product,
at least two portions comprising the containment(s) wherein the region between the said portions is foldable;
optionally one or plurality of unformed portion/s
wherein the said containment(s) of each of the said portions are disposed such that upon folding the said portions, containment(s) do not overlap,
an extended unformed planar portion is provided as an extension to the first portion wherein the said extended planar portion is adapted to be folded over the said first portion, an engaging provison provided on the one of the ends of the said planar portion that is removably pressfited in the receiving provision in the form of a slot of the unformed portion between the said first and second portion to engage the said extended portion.

8. A single piece re-closable unit pack as claimed in claims 1-7 comprising a central triangular portion provided with an opening at one of the corners, three triangular portions disposed along the three edges of the said central portion wherein the first portion is foldably disposed such that the first layered structure as claimed in claim 1 in which one or plurality of enclosed spaces containment(s) are formed to contain the product(s) is in the same plane and upper surface side of the central planar portion, an engaging provision that projects from the first planar portion; the second triangular planar portion that is foldably disposed along the second edge of the said central portion in such a manner that the enclosed spaces containment(s) up stand on the opposite face of the said central portion, that is the second repturable layered structure adjoins the upper surface of the said central portion; the third triangular planar portion that is foldably disposed along third edge of the said central planar portion wherein this planar portion is provided with a receiving provision in the form of a slot at the base and a stripe extended from the apex

wherein the third said planar portion is folded such that it overlays on the said central portion such that the containment(s) are on the upper surface

and the first portion is folded so as to overlay on the capsule side of the said third planar portion

wherein the containment(s) of the first portion are disposed in a manner with respect to the containment(s) of the said third portion such that they do not overlap when the said portions overlay

wherein the said stripe wraps around the three portions and fits in the said slot so as to hold the portions together when folded .

9. A single piece re-closable unit pack as claimed in claims 1-8 wherein the fold comprises of perforations and /or scoring to facilitate fold/s.

10. A single piece re-closable unit pack as claimed in claim 9 wherein the foldable region comprises of scoring wherein when folded the said region protrudes outwards in a convex profile.

11. A single piece re-closable unit pack as claimed in claims 1-10 wherein the unit pack is provided with an identification tag for identifying the package for authentication wherein the tag comprises at least two sets of identification information, said at least two sets of identification information comprising a first set of identification information and a second set of identification information each arranged within a different surface, side or plane of the identification tag, and identification features of said first set of identification information and identification features of said second set of identification information are arranged at a fixed relative spatial position with respect to each other, said fixed spatial relationship being used for identifying the package system.

12 A single piece re-closable unit pack as claimed in claims 1-11 wherein a reader means is provided to identify and read the unique identification information on the said package wherein the reader means is suitably able to detect the identification information relating to the product package and conveys the information or generates a signal in response to the information which is communicable to the external device. Suitably, the information is encoded and preferably is optical, electronic, magnetic or a combination thereof.

13 A single piece re-closable unit pack as claimed in claims 1-12 wherein the pack is provided with a means to detect disengagement of the said engaging provision from the receiving provision to monitor and /or record of package and /or product access from the package system wherein the pack is provided with a wired / wireless communication means capable of interacting with external / remote device/s.

14 A single piece re-closable unit pack as claimed in claims 1-13 wherein embedded system is adapted to fit in / on the said pack to detect disengagement of the said engaging provision from the receiving provision to monitor and /or record of package and /or product access from the package system wherein the said sensing means comprises of signal generating provision/s, data processing means, data logging and storing means configured with a communication means an optional communication switch, a power source, optional audio signal generating means, an oscillator wherein the said signal generating means gets activated upon disengaging the said package from the package holding provision wherein the activation of the signal generating provision may be done by various means such as electronic, mechanical, optical, visual.

15 A single piece re-closable unit pack wherein the package is adapted to fit external engaging and corresponding receiving provisions folding region wherein engaging provision in the form of a pressing means operationally coupled with the receiving provision in the form of flaps that are adapted to hold the layered structures of the package together wherein the provision comprises of a engaging provision in the form of a press button / switch wherein upon pressing the said press button/ switch the flaps are raised resulting in disengagement of the two portions of the package.

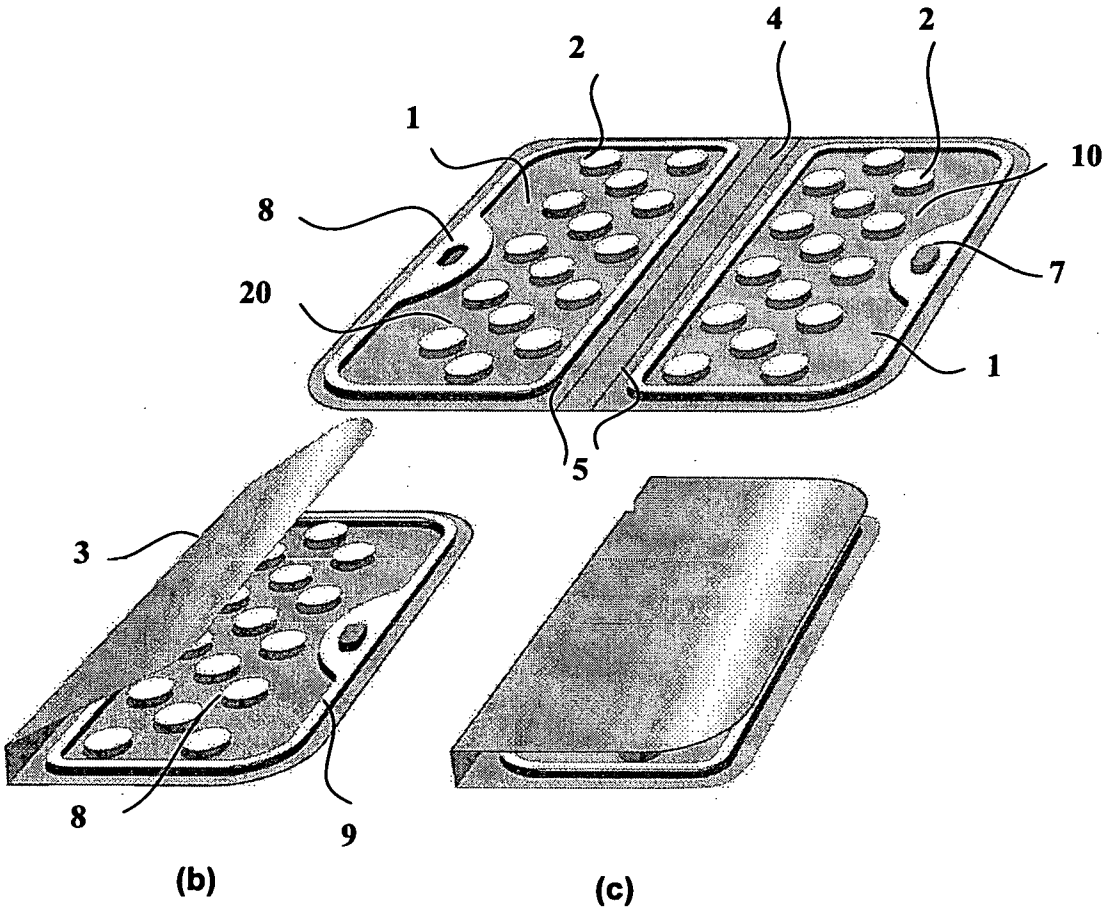


Figure 1

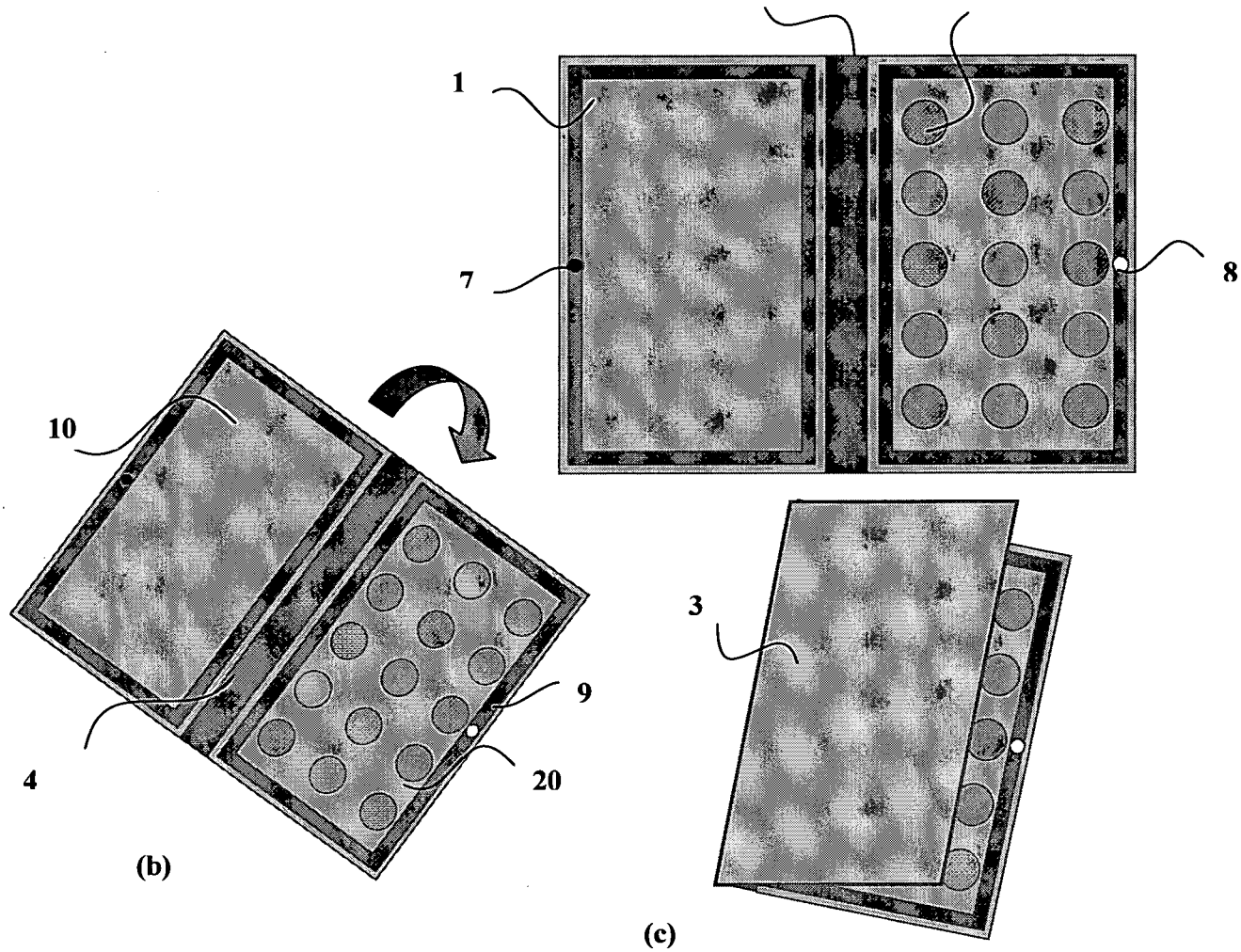
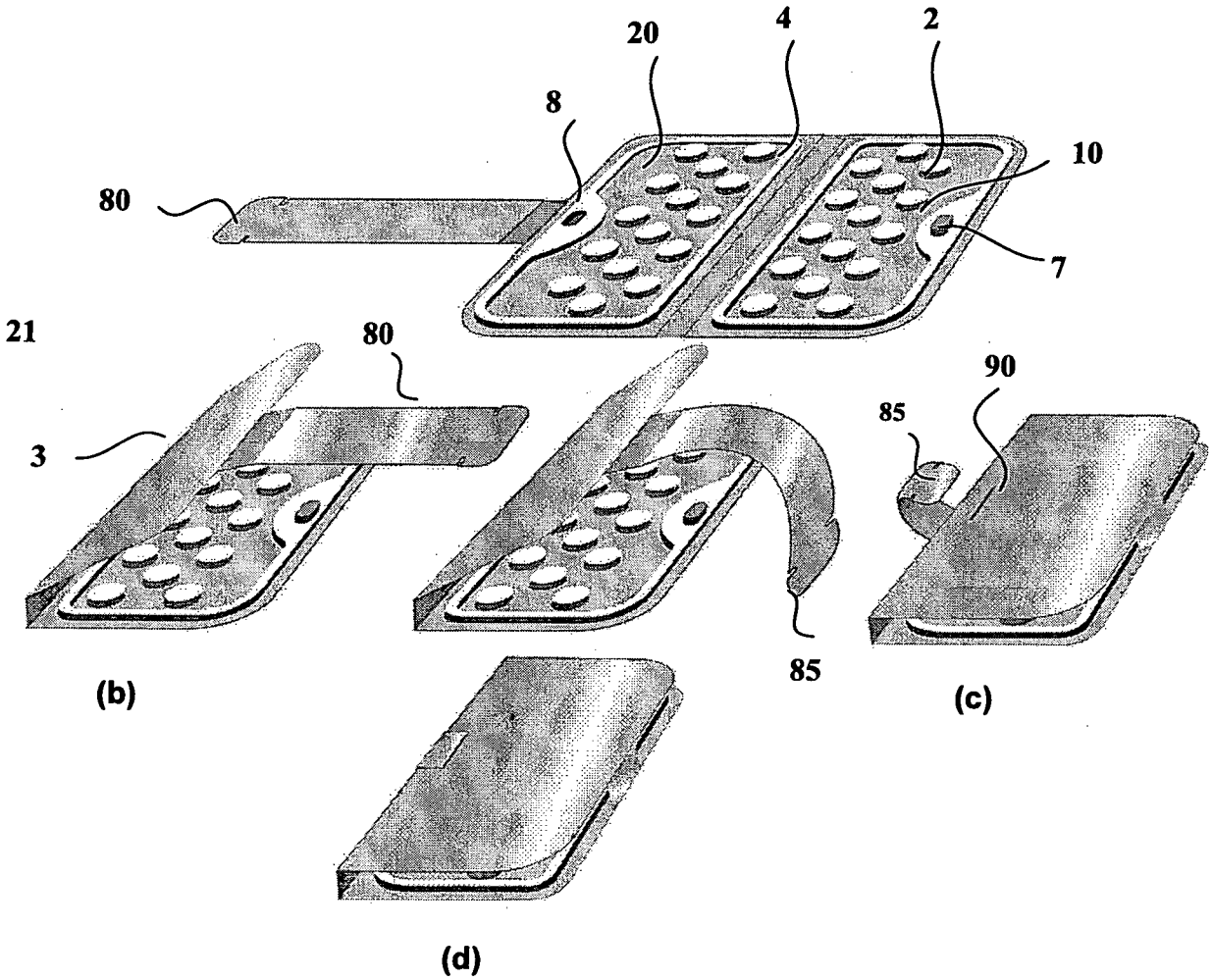


Fig. 2



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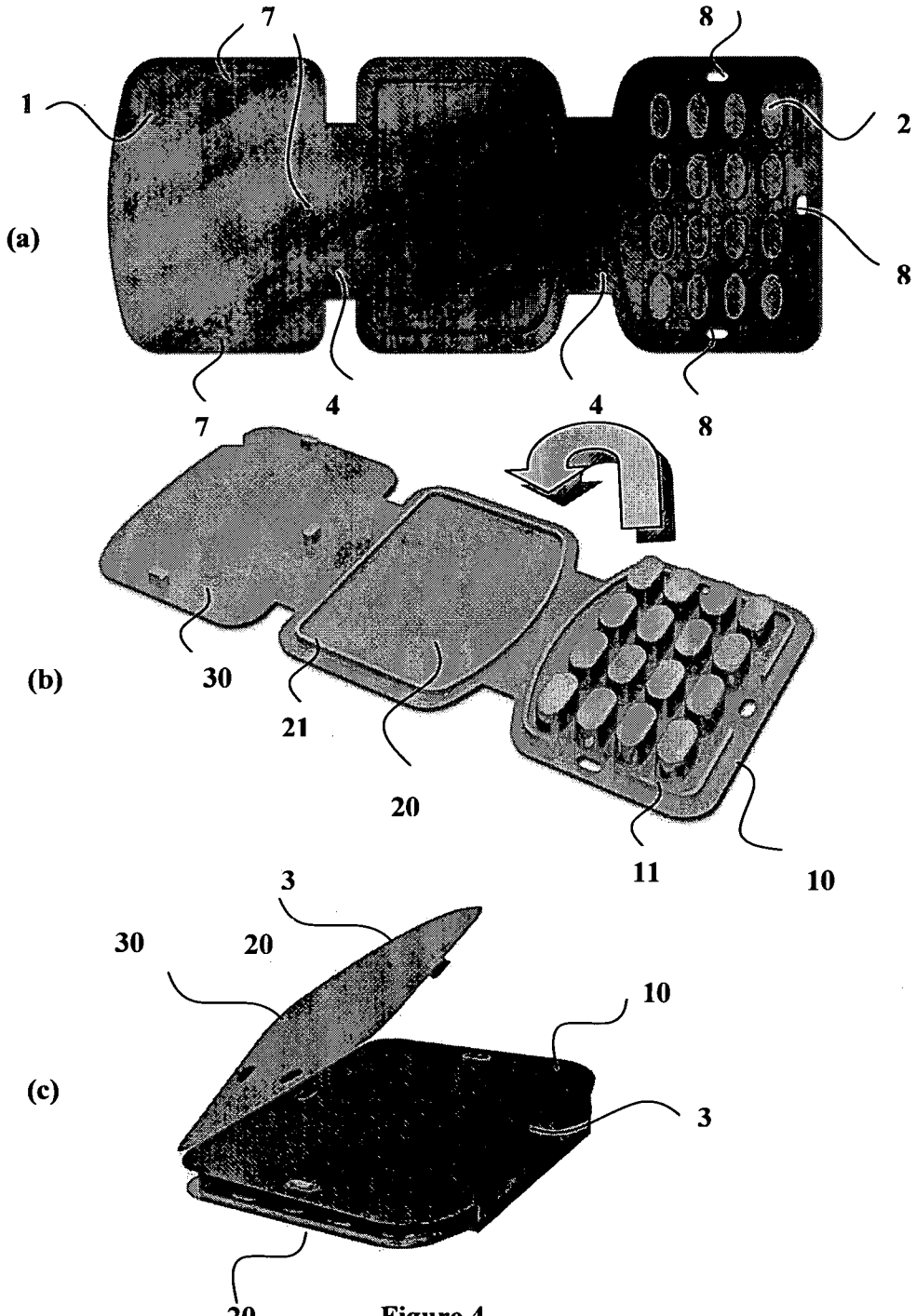

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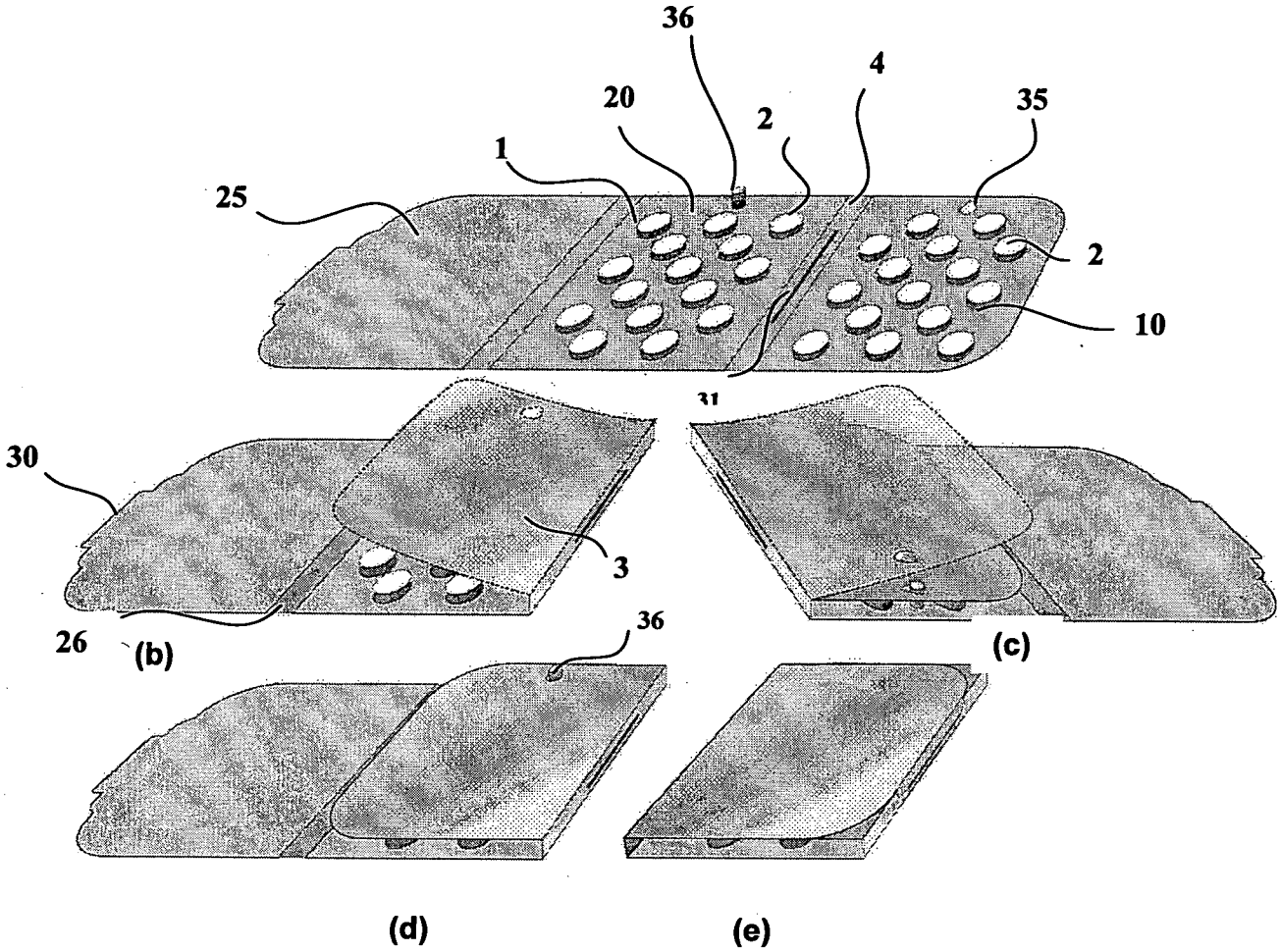

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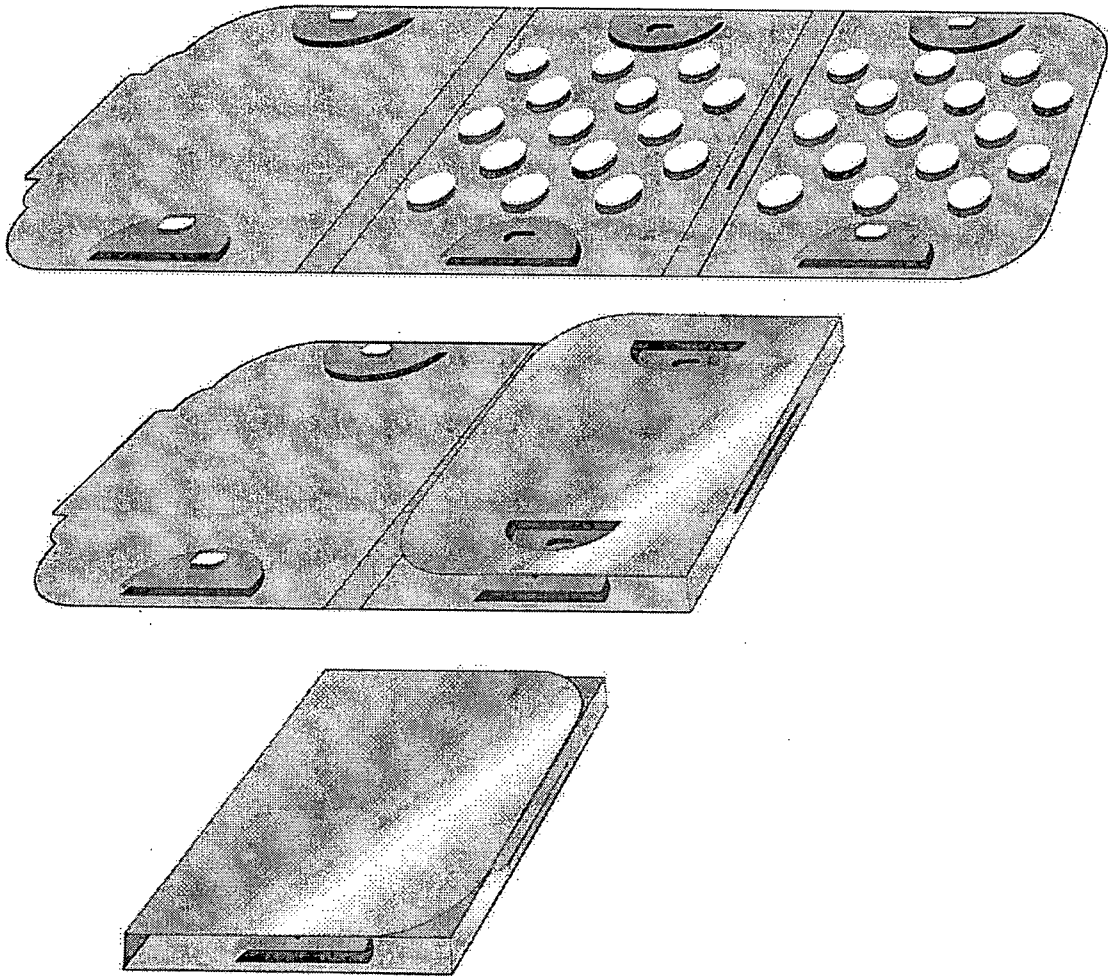

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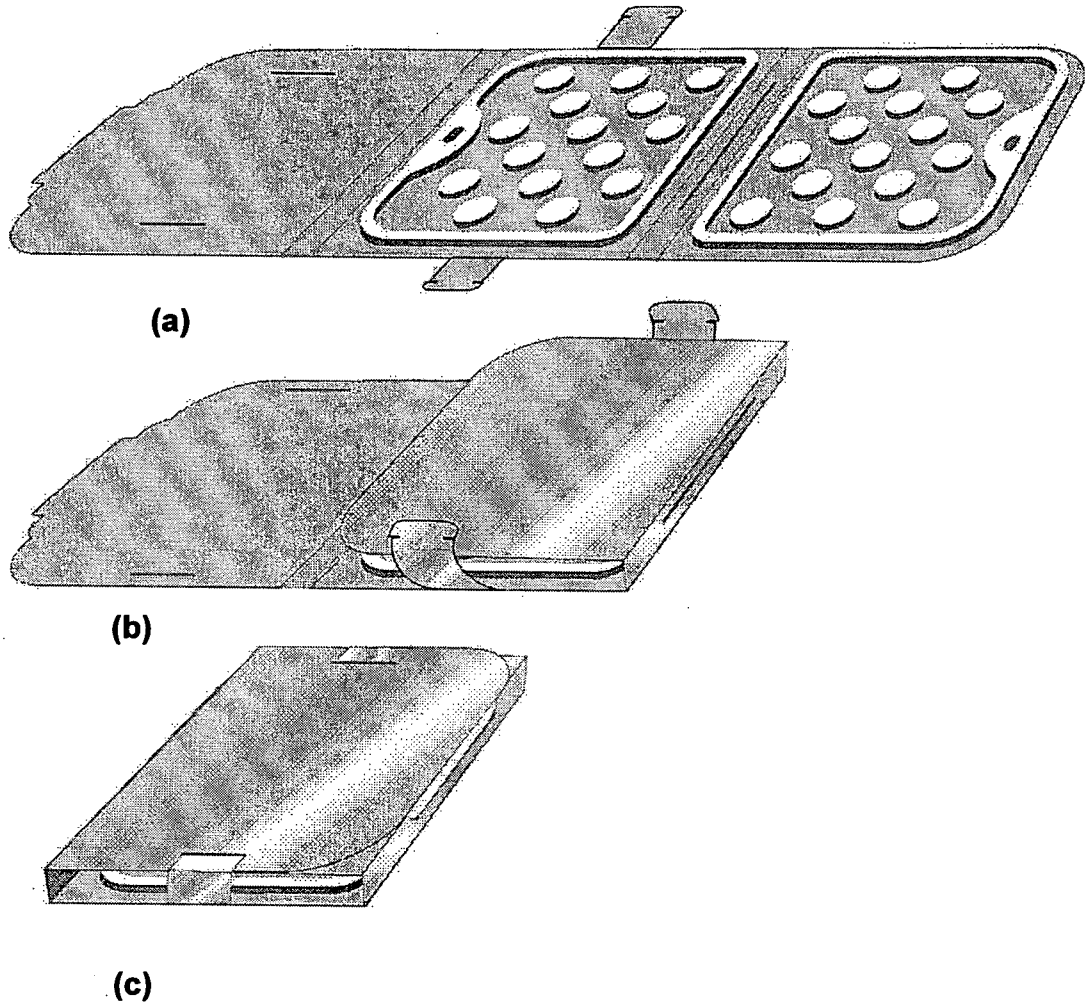

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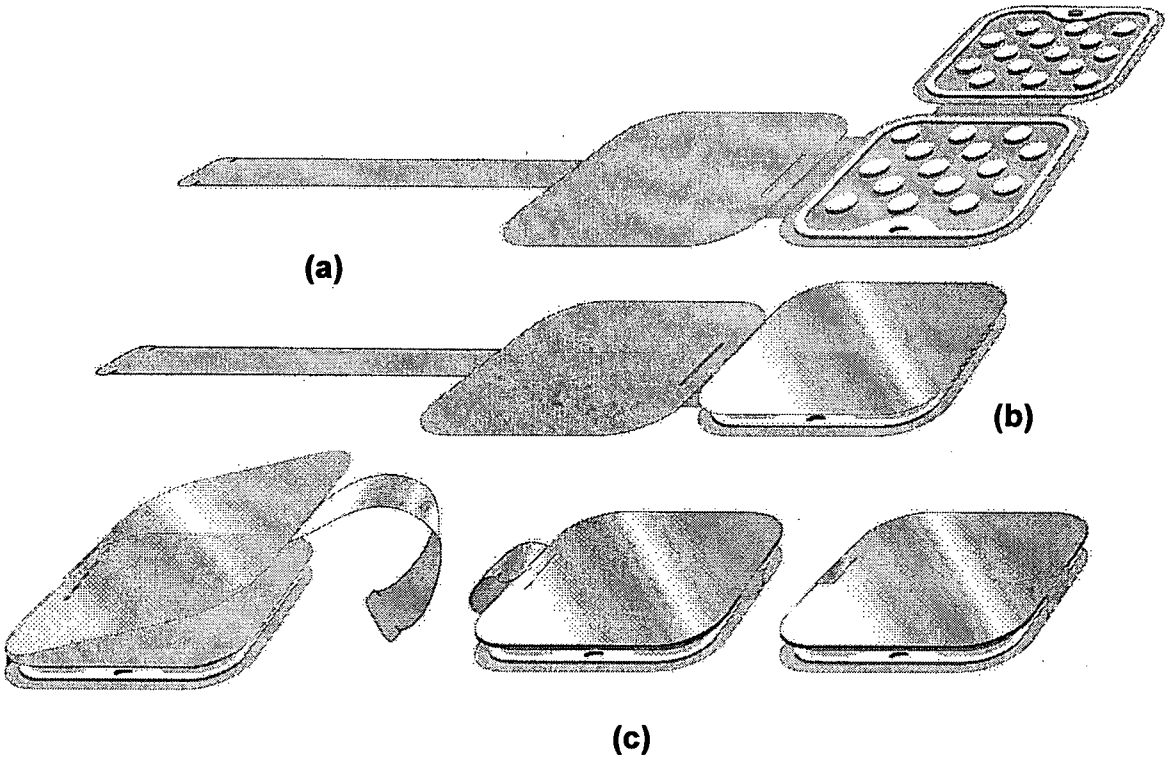

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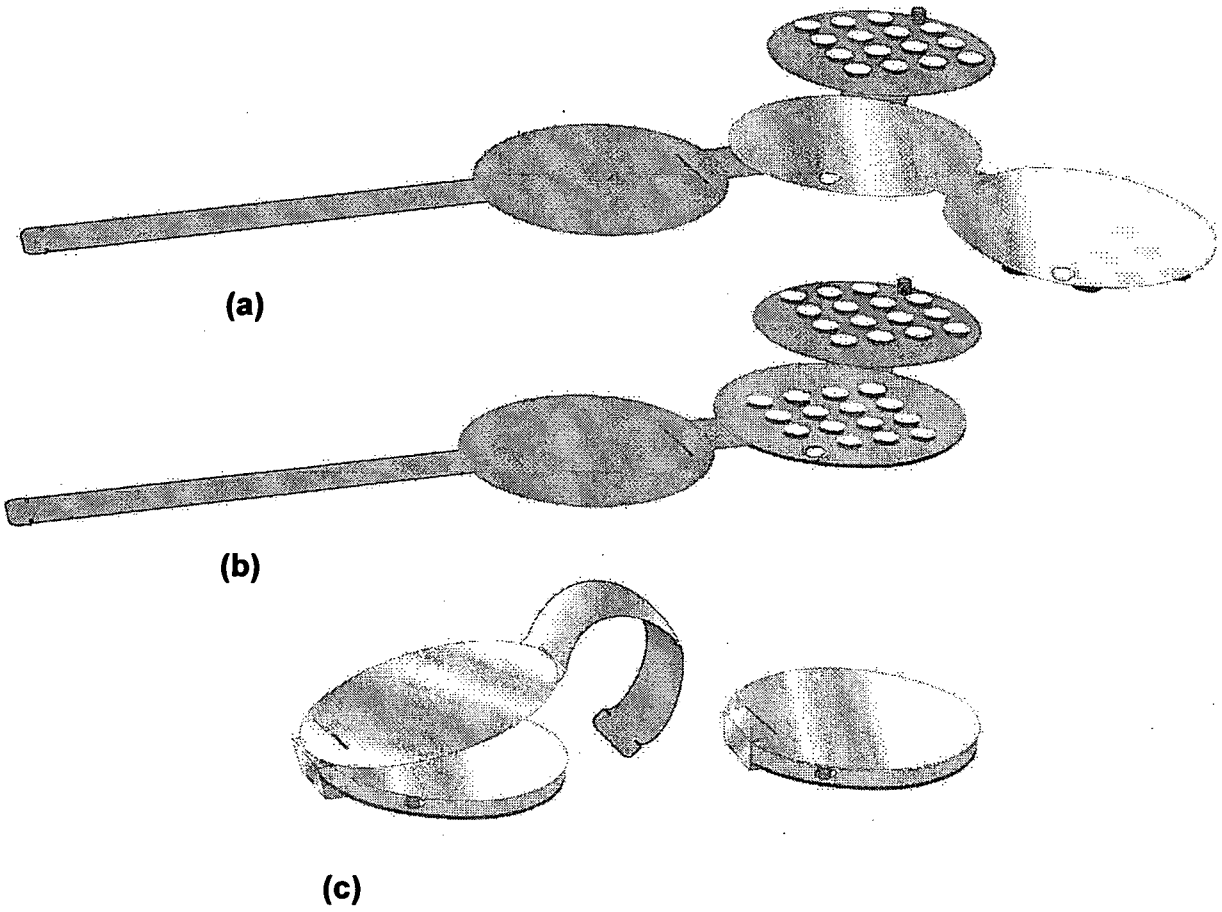


Figure 9

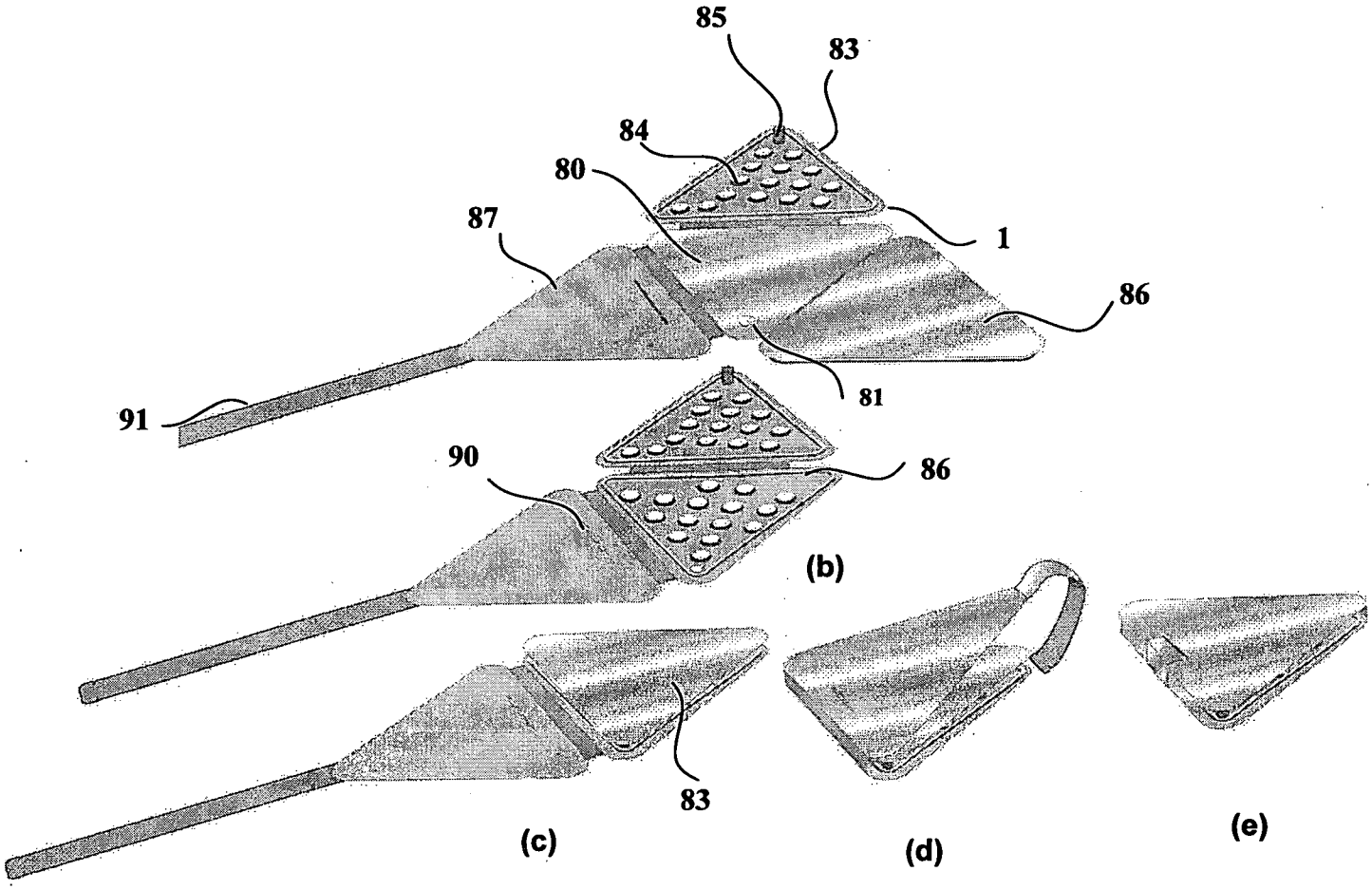
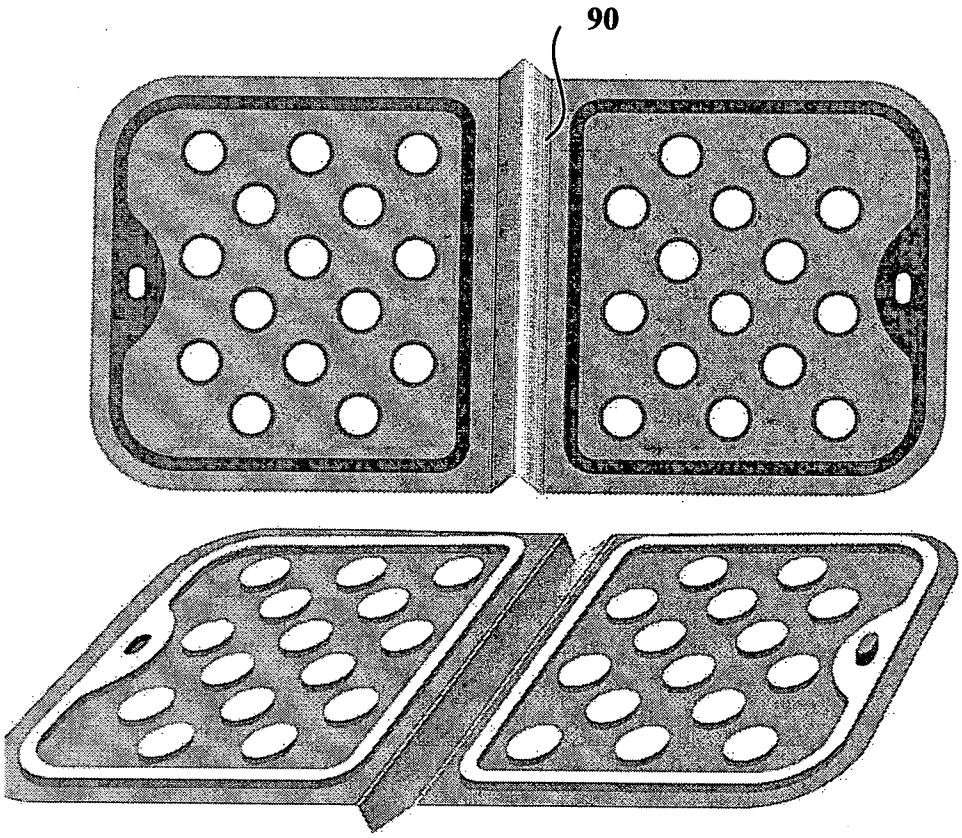
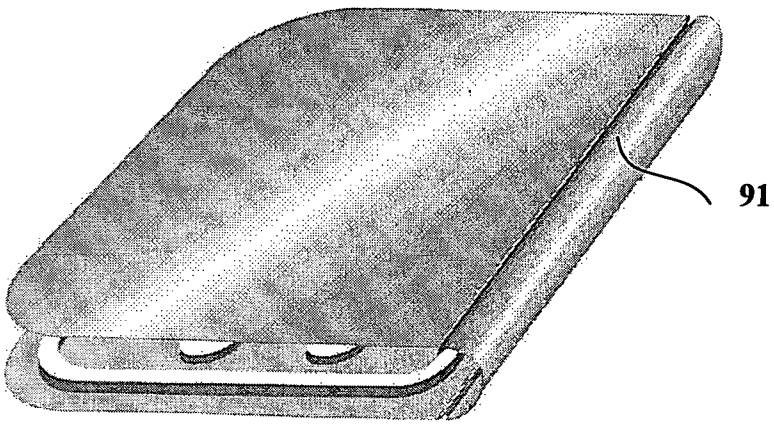


Figure 10



(a)



(b)

Figure 11

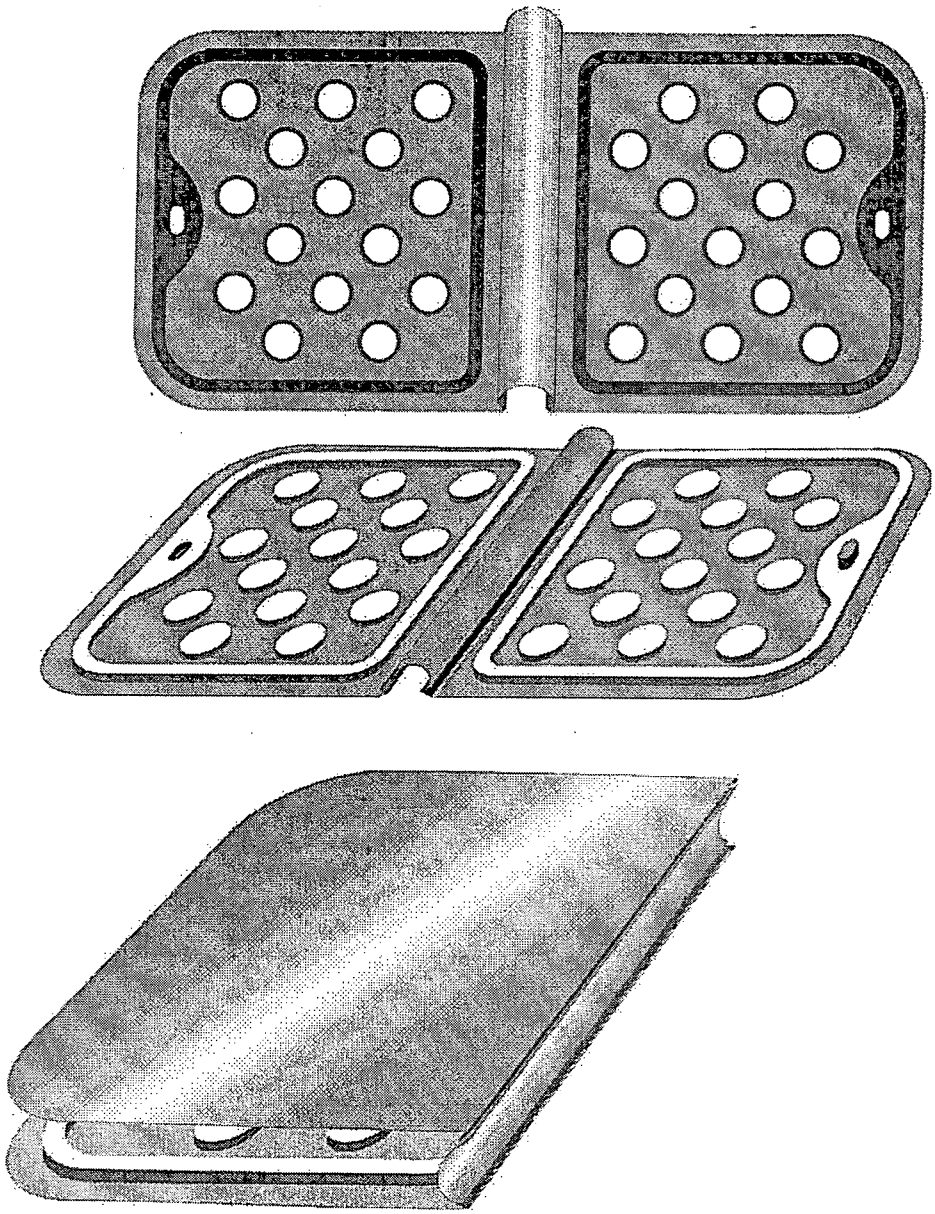


Figure 12

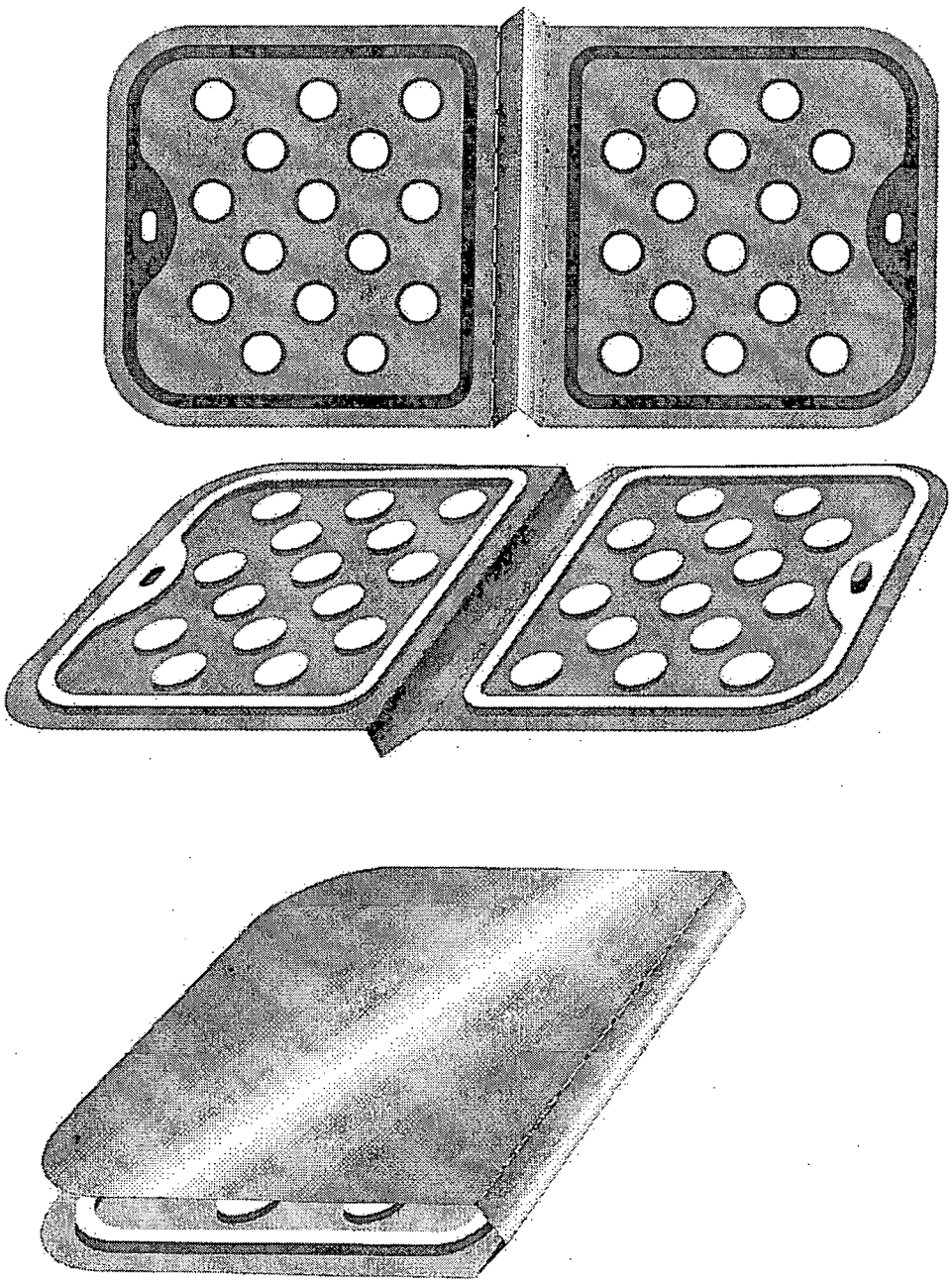


Figure 13

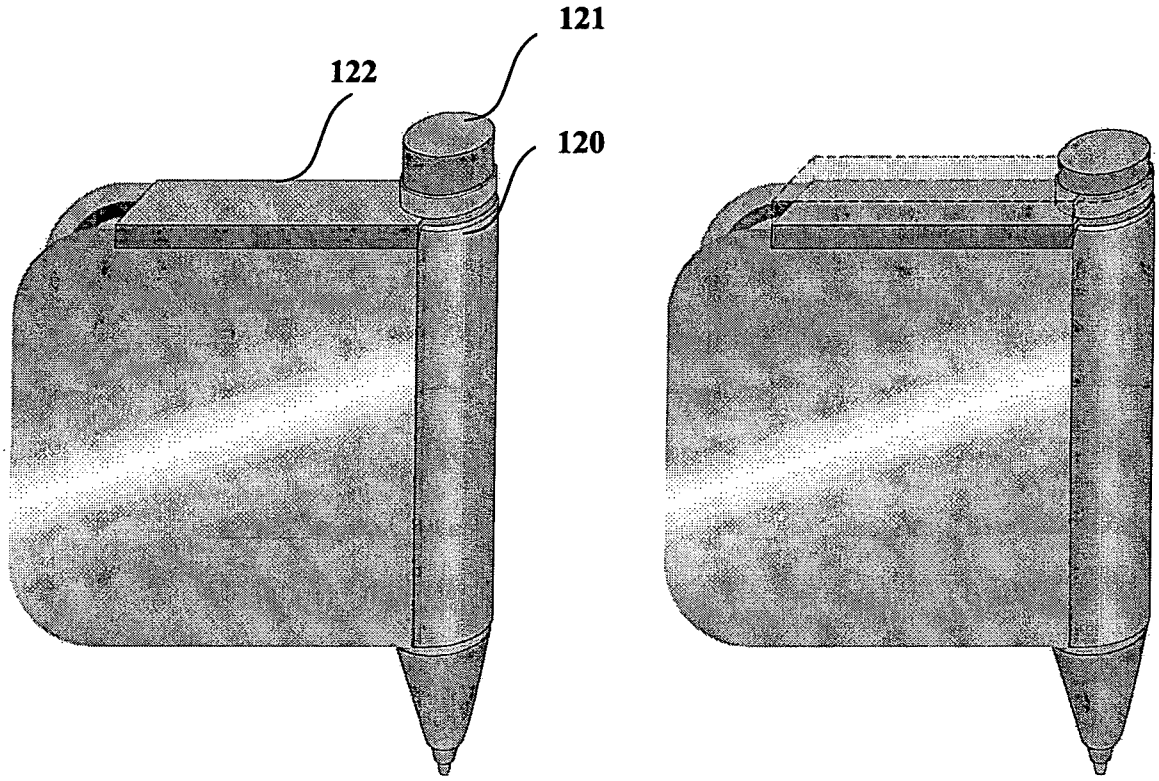


Figure 14

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IN 2009/000578

A. CLASSIFICATION OF SUBJECT MATTER
IPC[8]: ***B65D 75/36*** (2006.01); ***B65D 75/32*** (2006.01)
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC[8]: B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPODOC, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 219 997 B1 (FRIBERG, CLAES ET AL), 24 April 2001 (24.04.2001) *Fig. 2a-2d, abstract* --	1-2, 9
X	GB 2 266 880 A (BRYANT NEAL CHARLES), 17 November 1993 (17.11.1993) *fig. 1-5, abstract* --	1
A	EP 1 270 441 A1 (DIVIDELLA AG), 02 January 2003 (02.01.2003) *fig. 1-6, paragraph 15-23* ---	1-2

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
10 May 2010 (10.05.2010)	24 May 2010 (24.05.2010)

Name and mailing address of the ISA/ AT	Authorized officer
Austrian Patent Office Dresdner Straße 87, A-1200 Vienna	GÖRTLER M.
Facsimile No. +43 / 1 / 534 24 / 535	Telephone No. +43 / 1 / 534 24 / 365

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/IN 2009/000578

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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		EP A1 1395500	2004-03-10
		DK T3 1395500T	2006-11-20
		WO A1 02100736	2002-12-19