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(54) **Battery package**

(57) A point-of-sale blister package for batteries has a plurality of discrete compartments 3, each configured to retain a single respective battery 4. Each compartment 3 is closed by a respective closure portion 7 defined by perforations 6 in the blister card 1. Each closure portion 7 is individually openable to provide a permanent indication that the battery 4 retained in the compartment 3 has been accessed. The compartments 3 also include retaining projections 9 which removably retain the batteries 4 in the compartments 3, even when the closure portion 7 has been removed. Consequently, used batteries can be stored in the opened compartments 3 for later recycling or disposal. The used batteries 4 can be distinguished from the new batteries 4 by the unopened closure portion 7. In a further variant, the compartments 3 are provided in a plastics tray 10 and each compartment 3 is covered by a sealing strip 12 which breaks when the battery 4 is removed from the compartment.

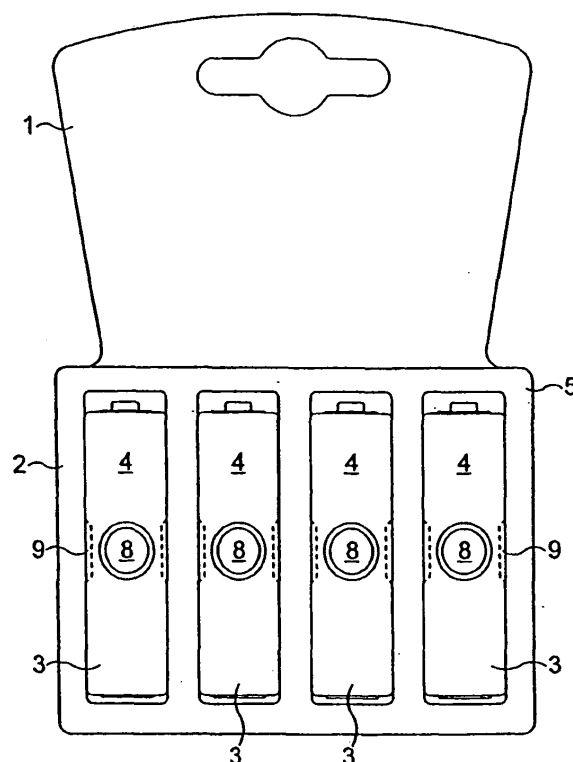


FIG. 1

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Description

[0001] The present invention relates to packaging for batteries and in particular to a point-of-sale package for batteries.

[0002] A point-of-sale package is the packaging in which a consumer purchases the batteries from a shop, for example from a display stand. A known point-of sale package contains two or four batteries in a plastics blister mounted to a blister card.

[0003] In recent times, the safe disposal and/or recycling of batteries has become increasingly important to consumers. Consequently, a consumer may store several used batteries until they can be taken to a recycling or disposal location. However, most batteries provide no visual indication that they have been used and are discharged. There is therefore scope for confusion on the part of the consumer between spent and fresh batteries where these are stored in the same location.

[0004] Viewed from a first aspect, the present invention provides a package for batteries as claimed in claim 1. The package comprises a plurality of discrete compartments. Each compartment is configured to retain a single respective battery and each compartment is closed by a respective closure. Each closure is individually openable to provide a permanent indication that the battery retained in the compartment has been accessed.

[0005] Edges of adjacent closures are preferably spaced apart from each other with a section of non-removable blister card therebetween. When pressure is applied to an inside of a closure through a battery i.e. when a consumer presses on the battery to remove it from the package, the closure opens. Through the spatial separation of adjacent closures, the opening of a closure does not disturb an adjacent closure. The package of the present invention thus ensures that the opening of a closure does not cause the accidental opening of an adjacent closure.

[0006] The closures are preferably formed in a single piece of material and the spaced apart edges are preferably separated by a strip of this material.

[0007] According to the invention, the batteries in the package each have their own compartment and each compartment has its own closure. The battery is removed by opening the closure and this provides a permanent indication that the compartment has been opened. Consequently, a spent battery can be stored in the opened compartment and the package automatically provides an indication that the battery in the open compartment is not "fresh".

[0008] This simple configuration has the significant advantage over known battery packaging that used batteries can be stored for recycling in the original packaging without any confusion between new and used batteries. In known point-of-sale packages for batteries, several batteries are stored within a single compartment. Consequently, if a single fresh battery is exchanged for a used battery, confusion can arise as to which of the bat-

teries is new and which is spent. With the package of the invention, this problem can be avoided.

[0009] The compartment and unopened closure may, in combination, completely enclose the battery. This is not, however, necessary. For example, the compartment may retain only the ends of the battery or may enclose the battery on only three sides. Similarly, the closure may only close or cover a portion of the compartment. It is only significant that, in normal use, the battery cannot be removed from the compartment otherwise than by opening the closure.

[0010] Desirably, the compartment may be configured to removably retain the battery when the closure has been opened. For example, the compartment may be provided with retaining projections which prevent a battery falling from the compartment, but allow the user to remove the battery from the compartment and insert another battery in its place. A compartment so configured assists the consumer in easily storing batteries for recycling or disposal.

[0011] By providing a discrete compartment for each battery, used batteries can be retained in position in the battery package separated from the remaining fresh batteries in the package to minimize any likelihood of confusion.

[0012] The closure may be destructively openable to provide the permanent indication that the battery retained in the compartment has been accessed. For example, the closure may be ripped, torn, bent or the like in order to access the battery. In this regard, the closure may be in the form of a tamper-evident seal.

[0013] In one embodiment, the compartments have an open upper surface which is partially closed by the closure. For example, the closure may be in the form of a sealing strip which crossed the open surface of the compartment. The sealing strip may be arranged to be broken on removal of the battery.

[0014] The compartments may be configured to conform substantially to size and shape of the batteries. In one arrangement, the compartments may be in the form of wells for receiving the batteries. The wells may have a base which includes a deeper portion at at least one end such that the user may tip the battery by pressing an end thereof into the deeper portion to aid removal of the battery from the compartment.

[0015] In one embodiment, the package is in the form of a blister pack comprising a blister mounted to a blister card. In general the blister is formed from moulded, for example vacuum moulded, plastics. The blister may be bonded to the blister card, for example adhesively bonded. In particular, the compartments may be formed in the blister to define an opening to receive the battery. The opening may have a periphery defined by a substantially planar bonding surface of the blister for bonding to the blister card. The bonding surface may define the entire periphery of the opening. In this way, when the bonding surface is bonded to the blister card, the compartment in the blister together with the blister card completely en-

close the battery.

[0016] The blister card may be formed from any suitable material, for example paper, cardboard, paperboard or plastics. In this embodiment, the blister card provides the closure for the compartment. The battery may be removed from the compartment simply by breaking through the material of the blister card. Desirably, the blister card is provided with perforations or lines of weakness to aid removal of the battery. Thus, the closures may be defined by perforations in the blister card. It is preferred that the closures are not joined to the blister so that the closure can be opened without the need to separate the closure from the blister.

[0017] To prevent bending of the blister pack in a direction orthogonal to the longitudinal direction of the batteries reinforcing means may be molded into the blister plastic provided between the compartments. These reinforcing means may take the form of webbing extending between the compartments away from the blister card. By increasing the bending stiffness of the package, the likelihood that a closure is damaged when a neighboring closure is being opened is reduced as the opening pressure is concentrated solely on the closure to be opened and is not transmitted to other closure members.

[0018] A visual indicator may be provided on a compartment to indicate to a user where pressure for removing a battery from a compartment should be applied to the compartment. This visual indicator can take the form of a deformation in a part of the blister forming a compartment, such as a raised portion on a compartment.

[0019] The invention is considered to be of particular advantage when the batteries are cylindrical batteries, for example of sizes AAA, AA, C or D. The invention may also be applied to the packaging of a plurality of 9V Block batteries. Typically, the package of the invention may be configured to contain two, four, six, eight, ten or more batteries in a single package.

[0020] Embodiments of the invention will now be described by way of example only and with reference to the accompanying drawings, in which:

Figure 1 is a plan view of a battery package according to an embodiment of the invention;

Figure 2 is an elevation of the battery package of Figure 1;

Figure 3 is a rear view of the battery package of Figure 1;

Figure 4 is a side view of the battery package of Figure 1;

Figure 5 is a sectional view of the battery package corresponding to Figure 4 and illustrating the removal of the battery;

Figure 6 shows a further embodiment accordingly to the present invention;

Figure 7 shows a cut view along line A-A of Figure 6;

Figure 8 is a perspective view of a battery package according to another embodiment of the invention;

Figure 9 is a sectional view of a compartment of the

battery package of Figure 8;

Figure 10 is a plan view of a battery package according to a further embodiment of the invention; and Figure 11 illustrates the closures of the battery package of Figure 10.

[0021] In the Figures, like reference numerals are used to identify corresponding components.

[0022] As illustrated in Figure 1, a point-of-sale package for batteries according to an embodiment of the invention comprises a cardboard blister card 1 to which is adhesively bonded a vacuum-formed blister 2 of transparent polyethylene terephthalate (PET). The blister 2 is formed with, in this embodiment, four compartments 3, each sized and configured to receive a respective battery 4. The number of batteries stored in the package may, however, be any number greater than one. In the embodiment shown, the batteries 4 are AA size.

[0023] As illustrated most clearly in Figure 2, each compartment 3 surrounds a battery 4 on three of its longitudinal sides. On the fourth side, the blister 2 defines an opening in each compartment 3 which is covered by the blister card 1. The periphery of the opening in the compartment is defined by a substantially planar portion 5 of the blister 2. It is the substantially planar portion 5 of the blister 2 that is adhesively bonded to the blister card 1. In this way, each battery 4 is completely enclosed by the compartment 3 of the blister 2 in combination with the blister card 1.

[0024] As illustrated in Figure 3, on the reverse of the blister card 1, perforations 6 are provided in the material of the blister card 1. The perforations 6 define a closure portion 7 of the blister card 1, which generally corresponds in size and location to the compartments 3 of the blister 2. The perforations 6 are positioned so that the closure portions 7 do not overlap with the planar portion 5 and so that the closure portions 7 are not bonded to the planar portion 5. The batteries 4 can be removed individually from the package by pressing out the battery 4 so as to rip open the closure portion 7 along the perforation 6, as illustrated in Figure 5. Strips 1a of the blister card 1 are provided between the closure portions 7. When a user presses a battery 4 through the blister card 1 and thereby opens a closure portion 7 any separating forces acting on the parts of the blister card 1 surrounding the closure portion that is being opened acts on the strips of material 1a adjacent the closure portion 7 that is being opened. The presence of the strips of material 1a between the closure portions 7 accordingly ensures that only a single closure portion is being opened at any one time.

[0025] Each compartment 3 of the blister 2 is provided, as part of the moulding, with a press button 8. The button 8 provides a visual guide to the consumer who can press against the button 8 to push the battery 4 against the closure portion 7 to break the perforations 6 and release the battery 4. It is not essential, however, for the blister to be provided with press buttons.

[0026] Each compartment 3 is also provided, as part of the moulding, with two (in this case) opposed retaining projections 9, which project into the interior of the compartment 3. The retaining projections 9 may, however, have any suitable configuration and/or number. When the batteries 4 are located in the compartments 3, the projections 9 bear against the batteries 4 to retain the batteries 4 in the compartments 3, even if the closure portion 7 has been removed. However, the material of the blister 2 is sufficiently resilient that the batteries 4 can force the projections 9 outwardly when they are removed from the compartments 3. Similarly, a battery 4 can be pushed into an empty, open compartment 3 and the projections 9 will move outwardly to accommodate the battery 4 before returning to the position illustrated in Figure 2 to retain the battery 4 in the compartment 3. In this way, spent batteries can be stored for later disposal or recycling in the opened compartments 3 of the package. The fact that the closure portion 7 has been torn open or removed provides an indication to the consumer that such a battery is not fresh. Because each closure portion 7 is individually removable, used batteries can be stored in the compartments 3 while new batteries remain in compartments 3 with the closure portion 7 intact without any confusion between new and used batteries.

[0027] In an further embodiment according to the present invention shown in Figures 6 and 7, reinforcing means 2a are further provided in part of the spaces between the adjacent compartments 3 to connect these blister compartments 3 in a direction orthogonal to the longitudinal direction of the compartments 3. The reinforcing means 2a of the preferred embodiment are molded into the blister 2. In the region occupied by the reinforcing means 2a, the blister card 1 is not attached to the blister 2. The reinforcing means 2a reduces the amount the blister pack can bend about its longitudinal axis.

[0028] Figures 8 and 9 illustrate another embodiment of the invention. In this embodiment, the compartments 3 are formed as wells in a vacuum formed plastics tray 10. As illustrated in Figure 9, the base of each compartment is formed with a generally central pivot projection 11, such that pressure on an end of the battery 4, as indicated by the arrow A in Figure 9, causes the battery 4 to tip, as indicated by the arrow B in Figure 9 and as illustrated in Figure 8. This "see-saw" action aids in removal of the battery 4 from the compartment 3. The effect of the pivot projection 11 is to provide a deeper portion of the compartment at one end of the battery to allow the battery to tip under pressure as described. Consequently, the pivot projection 11 can take any suitable form that achieves this effect. For example, the pivot projection 11 could extend continuously to one end of the base of the compartment 3, as indicated by the dashed-dotted line in Figure 9.

[0029] In this embodiment of the invention, a paper seal strip 12 is provided across the upper open surfaces of the compartments 3 and acts as a partial closure of the compartments 3. The seal strip 12 is adhered to the

portions of the tray 10 separating the compartments and to the edges of the tray 10, as illustrated in Figure 8. As illustrated in Figure 8, when the consumer presses the seal strip 12 covering a fresh battery 4, the seal strip 12 breaks as the battery 4 tips, as described above. The battery 4 can then be removed from the compartment 3, leaving the broken seal strip 12 as an indicator that a battery 4 has been removed from that compartment 3. If a battery 4, for example a used battery 4a is returned to an opened compartment 3, as illustrated in Figure 8, the broken seal strip 12 provides an indicator that the battery 4a is not the original battery 4 that was provided in that compartment 3. In this way, used batteries 4a can be stored in the tray 10 alongside the new batteries 4 without any confusion between the two.

[0030] Figures 10 and 11 illustrated a further embodiment of the invention. This embodiment corresponds substantially to the embodiment of Figures 8 and 9. However, in this case, the compartments 3 of the tray 10 are not provided with a pivot projection 11. Further, the sealing strip 12 is covered with a transparent plastics cover strip 13 which covers approximately two thirds of the open surface of each compartment. The cover strip 13 provides a respective closure portion 7 for each compartment 3. The closure portions 7 are separated by perforations 6 and the cover strip is bonded not only to the seal strip 12 but also to the upper surface of the tray 10. The batteries 4 are removed from the compartments 3 by pulling the end of the appropriate closure portion 7 to break the perforations 6. At the same time, the portion of the seal strip 12 attached to that cover portion 7 is also broken. The broken seal strip 12 and the broken perforations 6 provide a visual indication that the compartment has been accessed. In this way, used batteries can be stored in the tray 10 alongside the new batteries 4 without any confusion between the two.

[0031] In summary, a point-of-sale package for batteries has a plurality of discrete compartments, each configured to retain a single respective battery. Each compartment is closed by a respective closure portion defined by perforations in the blister card. Each closure portion is individually openable to provide a permanent indication that the battery retained in the compartment has been accessed. The compartments also include retaining projections which removably retain the batteries in the compartments, even when the closure portion has been removed. Consequently, used batteries can be stored in the opened compartments for later recycling or disposal. The used batteries can be distinguished from the new batteries by the unopened closure portion. In a further variant, the compartments are provided in a plastics tray and each compartment is covered by a sealing strip which breaks when the battery is removed from the compartment.

[0032] Although the invention has been described herein by reference to a specific example, this should not be construed as limiting the scope of the invention. Various modifications may be made within the scope of the

present invention.

Claims

1. A package for batteries, the package comprising a plurality of discrete compartments, each compartment configured to retain a single respective battery, wherein each compartment is closed by a respective closure and each closure is individually openable to provide a permanent indication that the battery retained in the compartment has been accessed, wherein edges of adjacent closures are spaced apart or completely separated from each other and the arrangement is such that each closure can be opened without disturbing any adjacent closure by applying pressure to an inside of said closure via a battery retained by said closure in an associated compartment. 5
2. A package as claimed in claim 1, wherein said adjacent closures are formed in a single piece of material and wherein said spaced apart edges are separated by a non-removable strip of said material. 10
3. A package as claimed claim 1 or 2, wherein the package is a blister pack comprising a blister mounted to a blister card. 15
4. A package as claimed in claim 3, wherein said closures are not joined to said blister. 20
5. A package as claimed in claim 3 or 4, wherein the closures are defined by perforations in the blister card. 25
6. A package as claimed in claim 3, 4 or 5, wherein reinforcing means are formed into the blister pack between adjacent said compartments to prevent bending of the blister pack. 30
7. A package as claimed in any preceding claim, wherein a visual indicator indicating an area for applying opening pressure to a said compartment is provided on said compartment. 35
8. A package as claimed in claim 7, wherein said visual indicator is formed by a raised portion of said compartment. 40
9. A package for batteries, the package comprising a plurality of discrete compartments, each compartment configured to retain a single respective battery, wherein each compartment is closed by a respective closure and each closure is individually openable to provide a permanent indication that the battery retained in the compartment has been accessed. 45
10. A package as claimed in claim 9, wherein the closure is in the form of a frangible sealing strip across the compartment. 50
11. A package as claimed in any preceding claim, wherein each closure is destructively openable to provide the permanent indication that the battery retained in the compartment has been accessed. 55
12. A package as claimed in any preceding claim, wherein the compartment and unopened closure in combination completely enclose the battery.

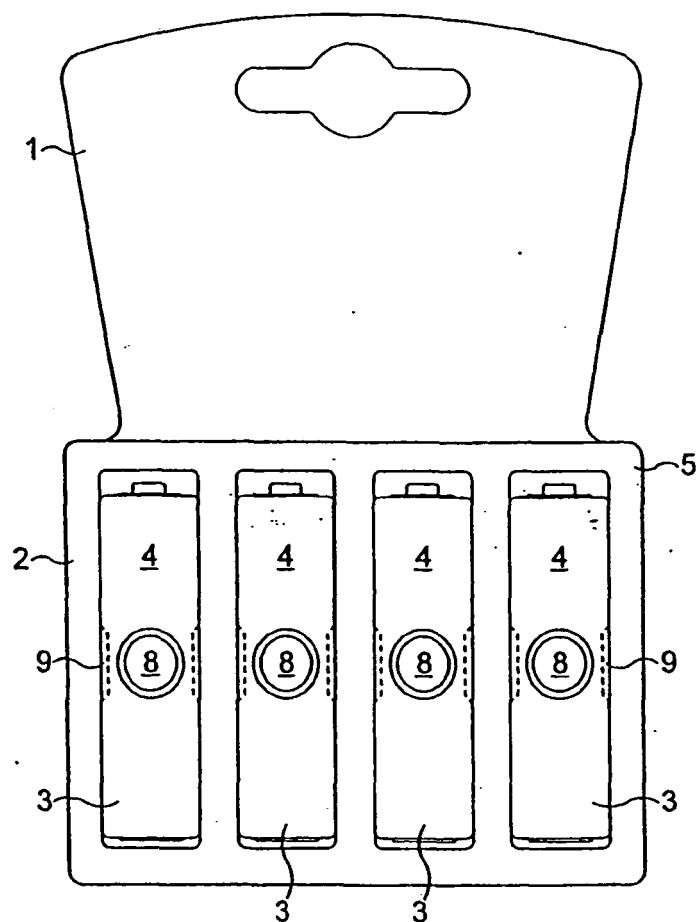


FIG. 1

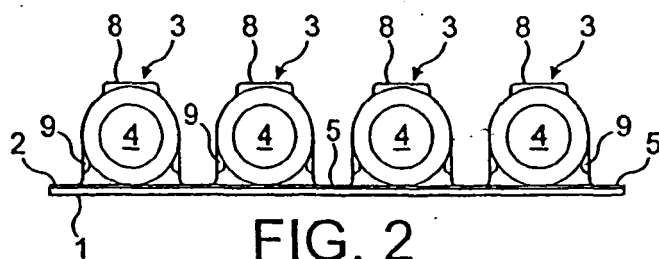


FIG. 2

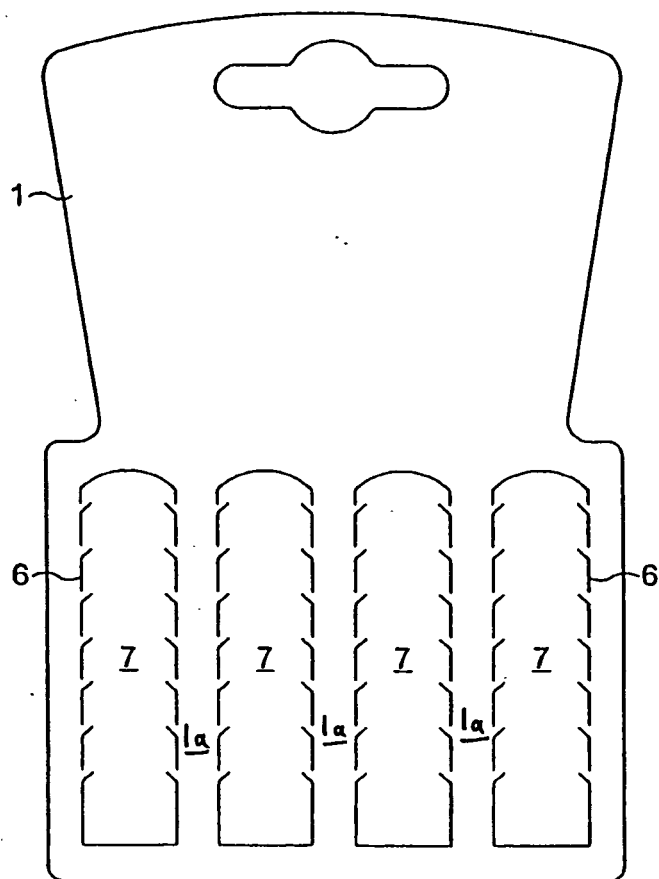


FIG. 3

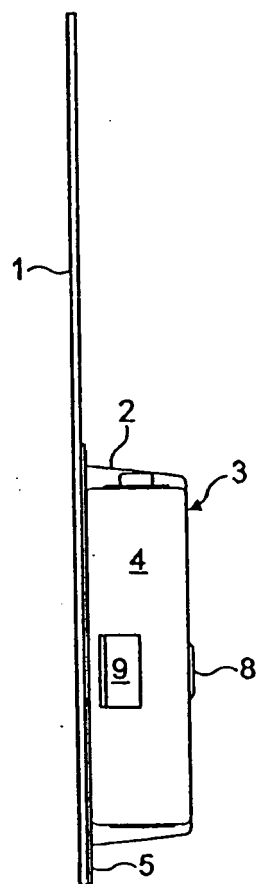


FIG. 4

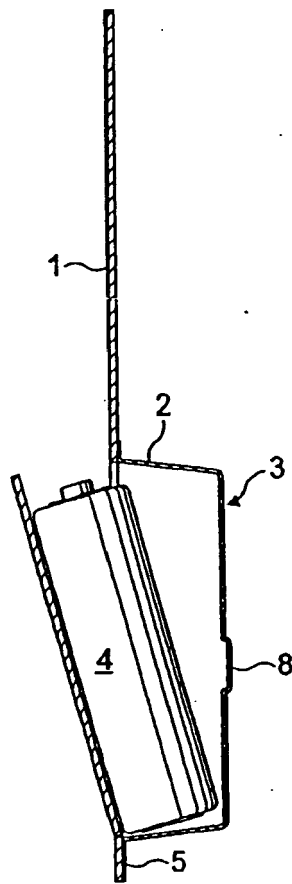


FIG. 5

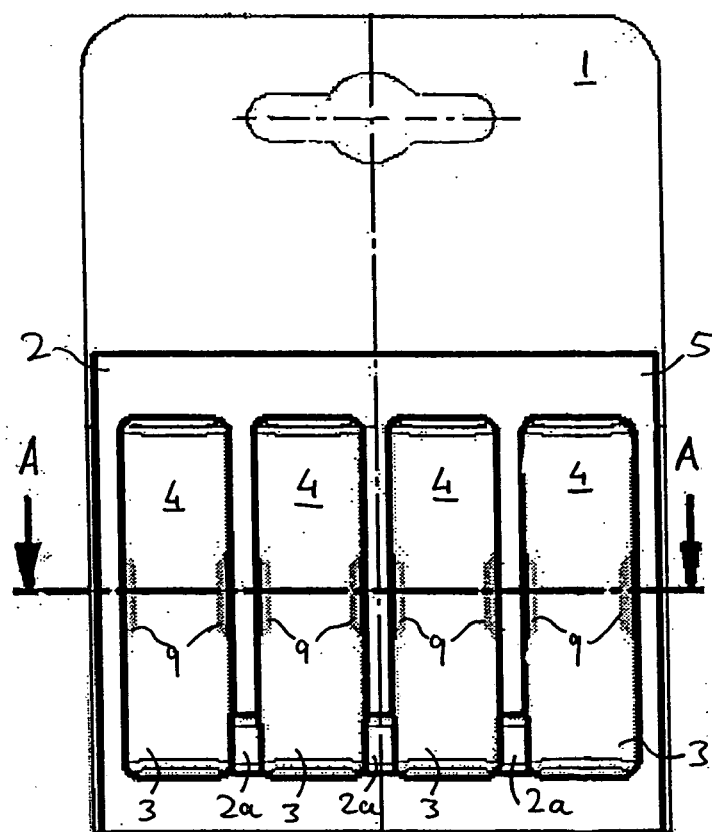


FIG. 6

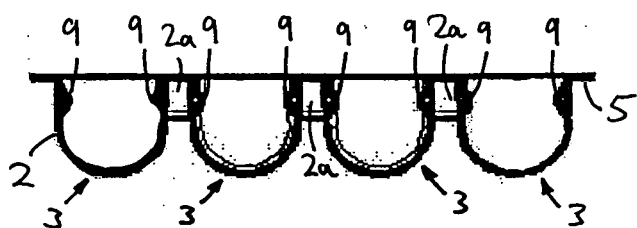


FIG. 7

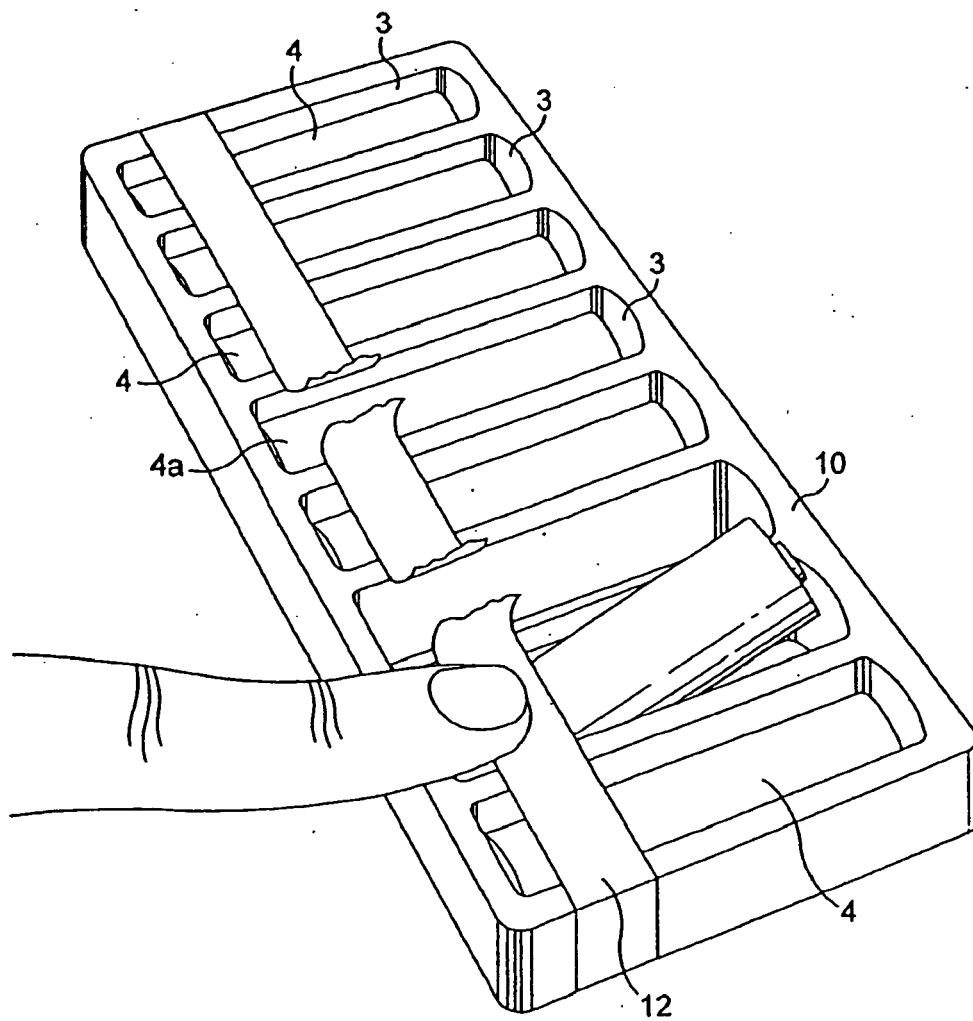


FIG. 8

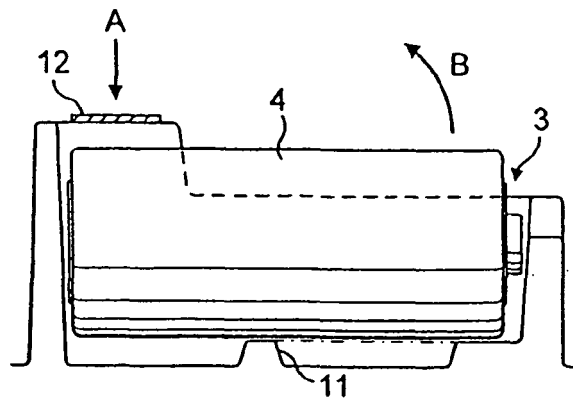


FIG. 9

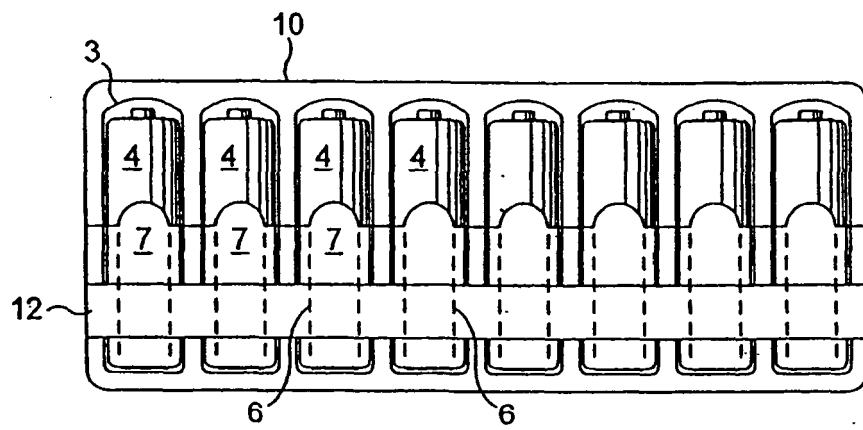


FIG. 10

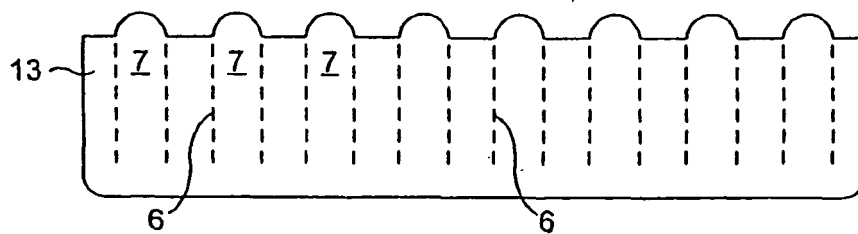


FIG. 11



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EUROPEAN SEARCH REPORT

Application Number
EP 05 25 7682

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Y	* column 5, line 1 - line 10 * * column 5, line 32 - column 6, line 42; figures *	6	
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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC) B65D
Place of search The Hague		Date of completion of the search 20 April 2006	Examiner SERRANO GALARRAGA, J
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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