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(19) **United States**(12) **Patent Application Publication**
Brenner(10) **Pub. No.: US 2012/0080353 A1**(43) **Pub. Date: Apr. 5, 2012**(54) **RETAIL AND STORAGE PACK FOR
ZINC-AIR BUTTON CELLS****Publication Classification**(75) Inventor: **Rolf Brenner**, Ellwangen (DE)(73) Assignee: **VARTA MICROBATTERY
GMBH**, Ellwangen (DE)(21) Appl. No.: **13/376,289**(22) PCT Filed: **Jun. 2, 2010**(86) PCT No.: **PCT/EP10/57703**§ 371 (c)(1),
(2), (4) Date: **Dec. 5, 2011**(30) **Foreign Application Priority Data**

Jun. 12, 2009 (DE) 10 2009 025 471.4

(51) **Int. Cl.****B65D 85/88** (2006.01)**B65B 1/04** (2006.01)(52) **U.S. Cl. 206/704; 53/467**(57) **ABSTRACT**

A retail and storage pack of the blister card type for zinc-air button cells includes a support, and a transparent plastics film fixed thereon and has cup-shaped stamp-outs for reception of the button cells, wherein the pack is divided into single pack regions which can respectively be torn off separately and each of which respectively comprises at least one of the cup-shaped stamp-outs, and wherein the support is provided with an adhesive layer to which button cells received in the cup-shaped stamp-outs adhere by their base, which bases are provided with air inlet openings.

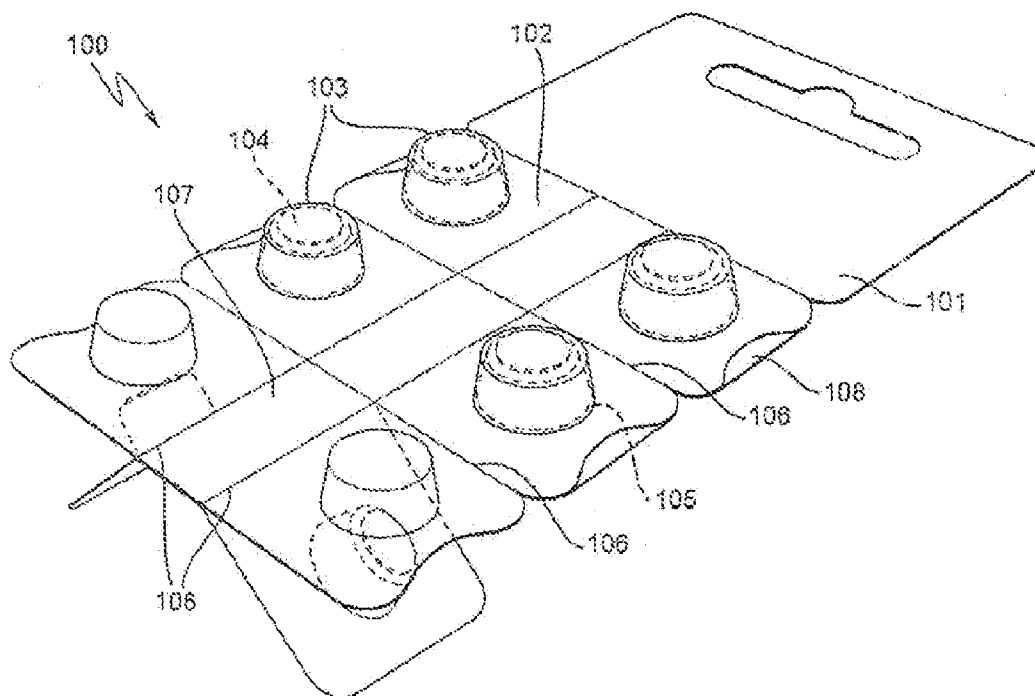


Fig. 1

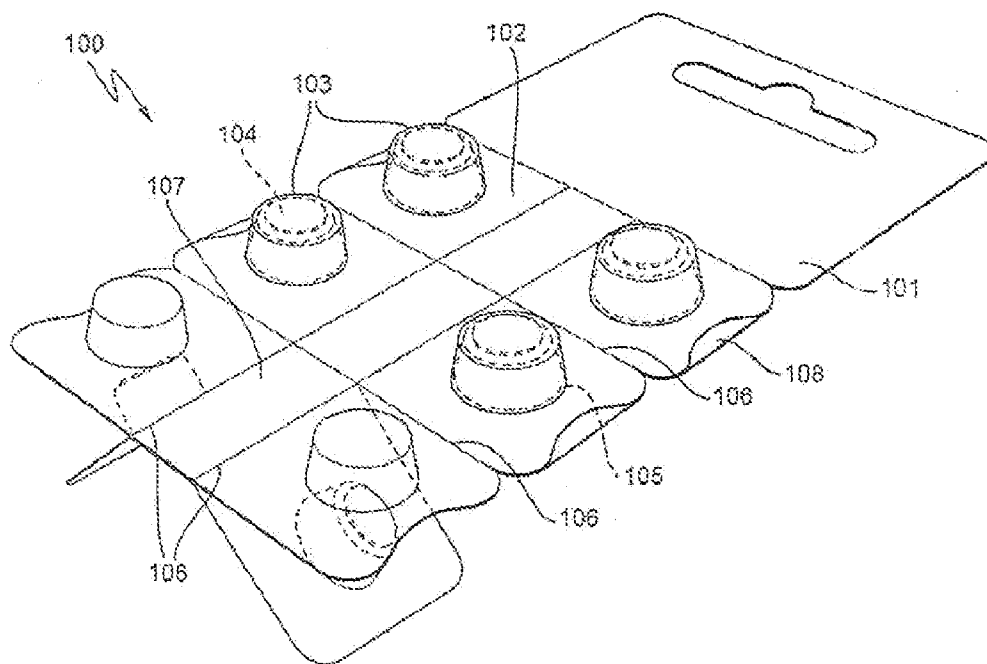
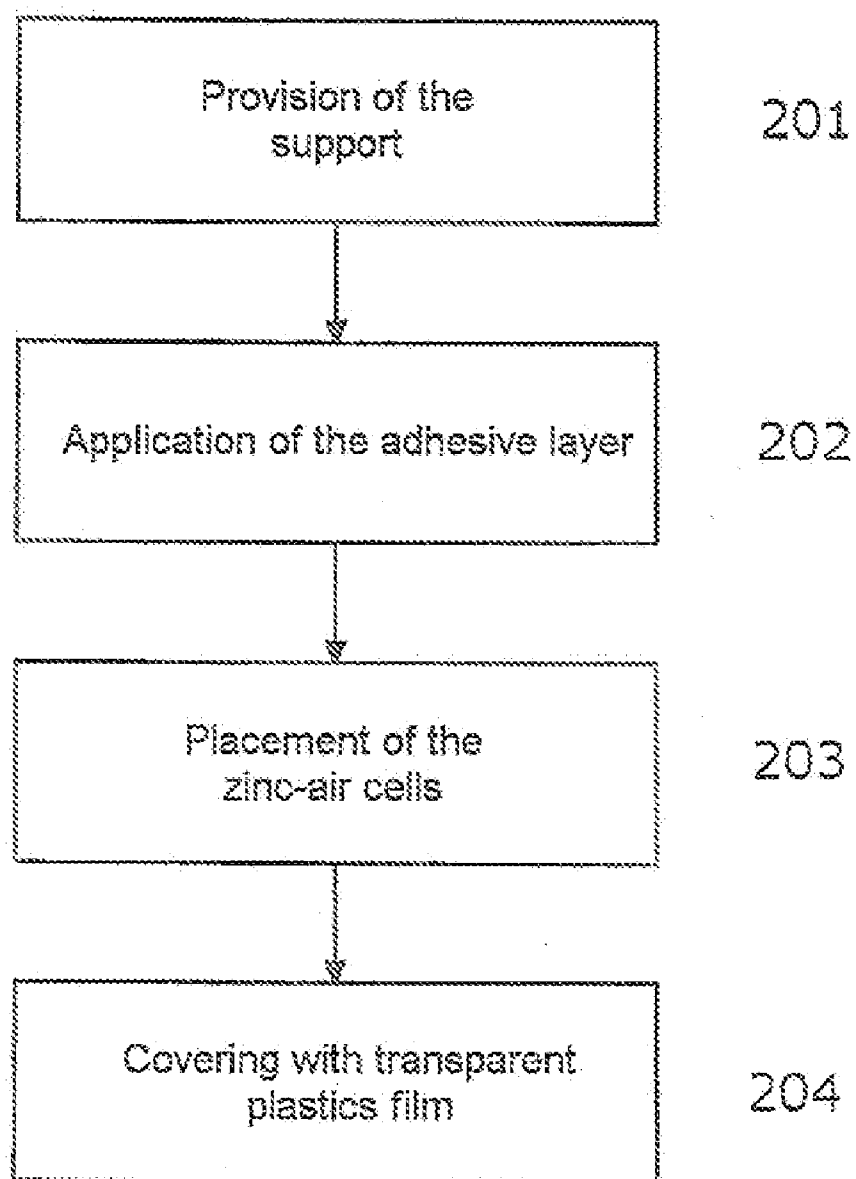


Fig. 2



RETAIL AND STORAGE PACK FOR ZINC-AIR BUTTON CELLS

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This is a §371 of International Application No. PCT/EP2010/057703, filed on Jun. 2, 2010 (WO 2010/142587, published on Dec. 16, 2010), which claims the priority of German Patent Application No. 10 2009 025 471.4, filed on Jun. 12, 2009, the entire contents of which are hereby incorporated by reference.

TECHNICAL FIELD

[0002] This disclosure relates to a retail and storage pack of the blister card type for zinc-air button cells comprising a support and a transparent plastics film which is fixed thereon and has cup-shaped stamp-outs for the reception of the button cells, and a method for packing zinc-air button cells.

BACKGROUND

[0003] The high consumption of zinc-air cells in button cell form, which are required, in particular, for hearing aids, inevitably also makes the packaging of this mass-produced article an important factor. It must on the one hand be economical, yet on the other hand also have an attractive appearance to promote buying interest.

[0004] Based on the tablet packagings of the pharmaceuticals industry, for gastight button cells of the rechargeable nickel/cadmium system or of the $\text{Ag}_2\text{O}/\text{Zn}$ and HgO/Zn primary systems packagings consisting, for instance, of two plastics trays, guided one inside the other, have been introduced, whereof the tray for receiving the cells is divided into circularly arranged compartments and can be turned toward the other tray such that the receiving compartments can successively be brought into congruence with a delivery outlet in the other tray and the respective cell removed.

[0005] With zinc-air cells, there is the particular problem, however, that their air inlet openings which are present in the cathode must be protected from air admission and moisture up to the point of use, i.e. the cells must also be storable in the packaging.

[0006] A corresponding packaging element is, for example, the press-out packaging described in DE 36 30 926. Between a tear-proof, airtight and transparent plastics film having cup-shaped stamp-outs and an aluminum foil sealed onto this, the cells therein are protected en bloc from ambient air.

[0007] As an alternative to such a packaging in which the cells are protected en bloc, the base of the cells can also be sealed with a detachable sticker. The cells with the sticker can then be transferred into an optionally configured outer packaging, which itself no longer has to have a protective function against the ingress of air moisture. Such packagings are by now widespread.

[0008] A further option for the packaging of zinc-air cells is known from U.S. Pat. No. 4,015,708. This describes as a packaging element for zinc-air cells a folding carton which has a cardboard support having circular recesses for the reception of the button cells, wherein the latter are glued by their base on a bottom-side film cover of the support.

[0009] Finally, DE 102 62 492 describes a packaging for zinc-air cells in which a rotatable insert is arranged rotatably between a support board and a cover board, which are glued together, wherein the cover board has an opening for the

rotatable insert and the support board has a closable tab which enables individual cells to be removed from the rotating insert.

[0010] All these packages offer a thoroughly usable protection for zinc-air cells, but fail to meet various single case requirements. For instance, in zinc-air cells whose base is protected by a detachable sticker, the detachment of the sticker is frequently found to be difficult, particularly by elderly people. Other packagings, for instance those which are known from DE 101 62 492 and from U.S. Pat. No. 4,015,708, have the drawback that they are not "portionable", by which should be understood that it is not possible to remove from them just one or two cells protected from air admission and moisture (for instance as an emergency store). This is hitherto possible only with those zinc-air cells which have the sticker on the base.

[0011] It could therefore be helpful to provide a retail and storage pack for zinc-air cells optimized with respect to the drawbacks of known packages. In addition, it should also, in particular, be as simple and cheap as possible to produce.

SUMMARY

[0012] I provide a retail and storage pack of the blister card type for zinc-air button cells including a support, and a transparent plastics film which is fixed thereon and has cup-shaped stamp-outs for reception of the button cells, wherein the pack is divided into single pack regions which can respectively be torn off separately and each of which respectively comprises at least one of the cup-shaped stamp-outs, and wherein the support is provided with an adhesive layer to which button cells received in the cup-shaped stamp-outs adhere by their base, which bases are provided with air inlet openings.

[0013] I also provide a method for packing zinc-air button cells including providing a support, applying an adhesive layer to the support, positioning the button cells to be packed on the support so that the button cells adhere to the adhesive layer by their base, which bases are provided with air inlet openings, and covering the support with the button cells adhering thereto, with a transparent plastics film, which has cup-shaped stamp-outs for reception of the button cells.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] FIG. 1 shows a retail and storage pack.

[0015] FIG. 2 illustrates schematically the course of my method for packing zinc-air cells.

DETAILED DESCRIPTION

[0016] My retail and storage pack for zinc-air button cells comprises a support and a transparent plastics film which is fixed thereon and has cup-shaped stamp-outs for the reception of the button cell. Customers or purchasers can see the zinc-air button cells through the plastics film, the packaging thus being constituted by a retail and storage pack of the blister card type.

[0017] A pack is distinguished, in particular, by the fact that it respectively comprises separately detachable single pack regions or is divided into single pack regions. Each of these single pack regions in turn comprises at least one of the cup-shaped stamp-outs. The pack is thus divided into two or more single pack regions, which respectively comprise a part of the support on which a part of the transparent plastics film having at least one of the cup-shaped stamp-outs is fixed and which correspondingly respectively contain at least one

packed zinc-air button cell. When they are torn off, these single pack regions maintain their protective function with regard to the protection of the cells in the cup-shaped stamp-outs from air inlet and moisture. This enables consumer to remove from the retail and store pack individual packed cells which can be carried as a "mini-store" by the user.

[0018] This is enabled by the fact that the support of a retail and store pack, in particular also of each of the single pack regions, is provided with an adhesive layer to which button cells received in the cup-shaped stamp-outs adhere by their base, which base is provided with the air inlet openings mentioned in the introduction. The adhesive layer is, for its part, fixedly connected to the support and forms an effective protection against the penetration of air and moisture into the cells.

[0019] Preferably, the support has the adhesive layer essentially only in those regions in which the base of the button cells comes to rest on the support. The adhesive layer correspondingly covers the surface of the support preferably only in part-regions, the number of which preferably precisely corresponds to the number of button cells for which the retail and store pack is designed. The positioning of the adhesive layer onto the support is here oriented to the positioning of the cup-shaped stamp-outs of the transparent plastics film which is fixed on the support (or vice versa).

[0020] As already mentioned, the adhesive must fulfill a protective function. It is thus necessary that the button cells do not unintentionally come loose from the support and the adhesive layer. On the other hand, however, it is also of course necessary to ensure that the button cells do not adhere too tightly to the support to ensure problem-free removal of the button cells. For this, the use of silicone-based adhesive has proved particularly suitable. Preferably, the adhesive layer is therefore constituted by a layer of a silicone-based adhesive.

[0021] Particularly preferred, a retail and storage pack has the adhesive layer in the form of a double-sided self-adhesive tape, one side of which is fixedly connected to the support and to the other side of which the button cells adhere. On the latter side is preferably found the aforementioned layer of silicone-based adhesive, the adhesive on the former side being able to be tailored to the respective support material.

[0022] The use of a double-sided self-adhesive tape offers major advantages with regard to production engineering aspects and the costs of the packaging. Thus, if self-adhesive tapes are used, the position and area of the adhesive layer on the support can thus be adapted in an easy and flexible manner to the respective requirements (number and size of the button cells to be packed). Moreover, self-adhesive tapes are cheaply available as endless tapes and the necessary use of machinery in the treatment thereof turns out to be very low.

[0023] For the purpose of dividing the pack into the above-mentioned respectively separately detachable single pack regions, a retail and storage pack can be perforated and/or punched. By perforation, and alternatively or simultaneous punching, weakening lines can be made in the support and/or in the transparent plastics film fixed onto the support, along which lines the structural integrity of the support or of the film are weakened. Under appropriate buckling and/or tensile loads, the support or the plastics film can be torn apart at the weakening lines. Simple separability of the single pack regions of a retail and storage pack is thus ensured.

[0024] The production of retail and storage packs can be realized within the framework of my method for packing zinc-air button cells.

[0025] This method comprises at least the steps:

[0026] provision of a support,

[0027] application of an adhesive layer to the support,

[0028] positioning on the support of the button cells to be packed so that the button cells adhere to the adhesive layer by their base, which base is provided with the air inlet openings, and

[0029] covering of the support, with the button cells adhering thereto, with a transparent plastics film which has cup-shaped stamp-outs for the reception of the button cells.

[0030] The adhesive layer has already been discussed above, a cardboard support or a flexurally rigid plastics film, for instance, being able to be used as the support. The cardboard support is preferably used when it is wished to allow the zinc-air cells to be pushed through the support.

[0031] Particularly preferred, the retail and storage pack is preferably configured, however, such that removal of the button cells can be realized by stripping the cells from the support. For this purpose, the transparent plastics film can be detachably fixed on the support so that a button cell can be removed by detaching the plastics film and subsequently stripping the cell from the support.

[0032] Those and further features of my storage packs and methods are explained below with reference to the following description of the drawings. The individual features can here be realized singly or in combination with one another. The described examples serve merely for illustration and for better understanding and should in no way be construed as restrictive.

[0033] In FIG. 1, an example of a retail and storage pack 100 is represented. On a support 101 is fixed a transparent plastics film 102 having cup-shaped stamp-outs 103 which offers a receptacle for the product to be packed, the zinc-air cells 104. An adhesive layer 105 is located on the support 101 and precise in the regions in which the base of the button cell 104 comes into contact with the support 101. In shape and size, the regions having the adhesive layer are here essentially matched to the dimensions of the button cells or button cell bases so that of the adhesive layer 105 only a narrow circumferential rim is discernible.

[0034] The retail and storage pack 100 has a plurality of weakening lines 106 which divide the pack into a plurality of single pack regions. The individual single pack regions can be separated along the weakening lines 106. Thus, a single pack region having two zinc-air cells 104 can be separated from the retail and storage pack 100, for instance, by tearing off along the weakening line 106a.

[0035] The represented retail and storage pack 100 has a web 107, which can perform a type of hinge function. In the region of the web 107 the plastics film 102 is fixedly connected to the support 101, yet to the right and left thereof, in the region around the cup-shaped stamp-outs 103, there is a substantially weaker attachment to the support 101. In these regions, the plastics film 102 can be relatively easily detached from the support 101 (or vice versa) so that the corresponding zinc-air button cell 104 can be removed. The detachment of the plastics film 102 is facilitated by the opening aids 108.

[0036] In FIG. 2, the method with respect to the packing of zinc-air button cells is illustrated schematically. In the zone 201, a suitable support, for instance a cardboard support, is provided from a magazine. In the section 202, the support is then provided in predefined regions with an adhesive layer. This is preferably realized by strips of a double-sided self-adhesive tape being placed in position on the support by a

suitable dispenser. After this, the zinc-air cells to be packed are placed on the adhesive strip in the section **203**. In the section **204**, a transparent plastics film having cup-shaped stamp-outs is fixed on the support, in particular by heat-sealing. The plastics film can be pre-perforated, though it is also possible to perforate or punch the support, together with the film applied thereto, in a subsequent step.

1-7. (canceled)

8. A retail and storage pack of the blister card type for zinc-air button cells comprising:

a support, and

a transparent plastics film fixed thereon and having cup-shaped stamp-outs for reception of the button cells,

wherein the pack is divided into single pack regions which can respectively be torn off separately and each of which respectively comprises at least one of the cup-shaped stamp-outs, and

wherein the support is provided with an adhesive layer to which button cells received in the cup-shaped stamp-outs adhere by their base, which bases are provided with air inlet openings.

9. The pack as claimed in claim **8**, wherein the support has the adhesive layer essentially only in those regions in which the base of the button cells comes to rest on the support.

10. The pack as claimed in claim **8**, wherein the adhesive layer comprises a layer of a silicone-based adhesive.

11. The pack as claimed in claim **8**, wherein the adhesive layer comprises a double-sided self-adhesive tape, one side of which is fixedly connected to the support and another side of which the button cells adhere.

12. The pack as claimed in claim **8**, wherein, for the purpose of dividing the pack into the separately detachable single pack regions, the transparent plastics film is perforated and/or punched.

13. The pack as claimed in claim **8**, wherein, for the purpose of dividing the pack into the separately detachable single pack regions, the support is perforated and/or punched.

14. A method for packing zinc-air button cells comprising:

providing a support,

applying an adhesive layer to the support,

positioning button cells to be packed on the support so that the button cells adhere to the adhesive layer by their base, which bases are provided with air inlet openings, and

covering the support with the button cells adhering thereto, with a transparent plastics film, which has cup-shaped stamp-outs for reception of the button cells.

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