US 20090242451A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2009/0242451 A1

(43) Pub. Date: Oct. 1, 2009

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(54) **BLISTER PACK**

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(21) Appl. No.: **12/078,327**

(22) Filed: **Mar. 28, 2008**

Publication Classification

(51) **Int. Cl.**
B65D 85/00 (2006.01)

(52) **U.S. Cl.** **206/531**

(57) **ABSTRACT**

A blister pack (**1**) contains a blister portion (**5**) and a base portion (**6**), between which a blister is inserted in a sandwich-like manner. The base portion (**6**) contains detachable blocking segments (**7**) which each cover a push-out region for articles (**18**). For childproofing purposes, the blister portion (**5**) contains safeguarding segments (**8**) which overlap the blocking segments (**7**) in each case and can be swung up out of the plane of the blister portion (**5**) by pressure being applied from the rear side. The safeguarding segments (**8**) here are configured such that, in the rest position, they prevent access to the blocking segments (**7**), and it is only after the safeguarding segments (**8**) have been at least partially swung up that they allow pressure to be applied to the blocking segments (**7**). In order to increase the childproofing further, the base portion (**6**) has push-out segments (**9**) which are located above the safeguarding segments (**8**) and can be pressed in from the rear side (R) in order to swing out the safeguarding segments (**8**).

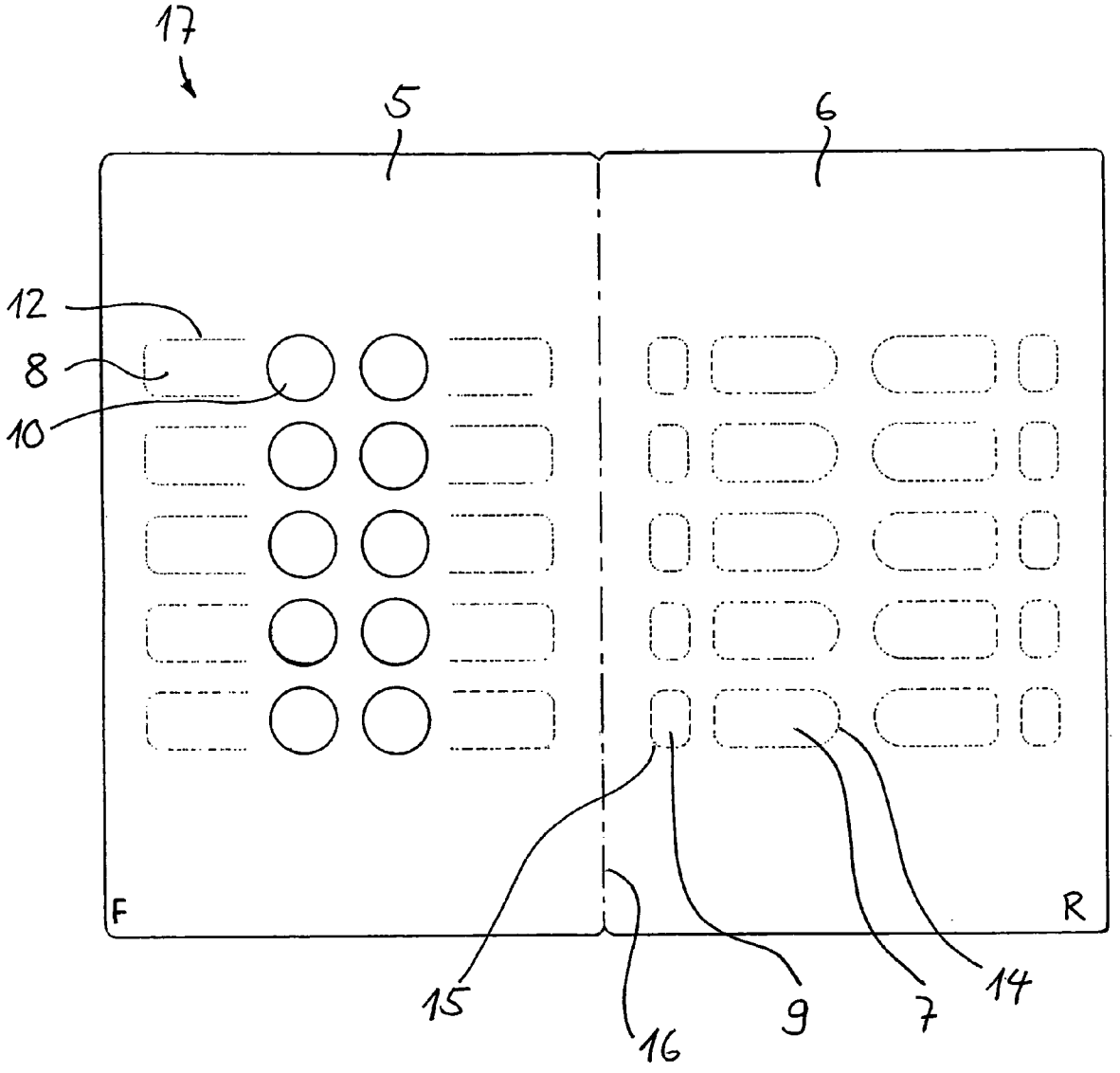


Fig.1

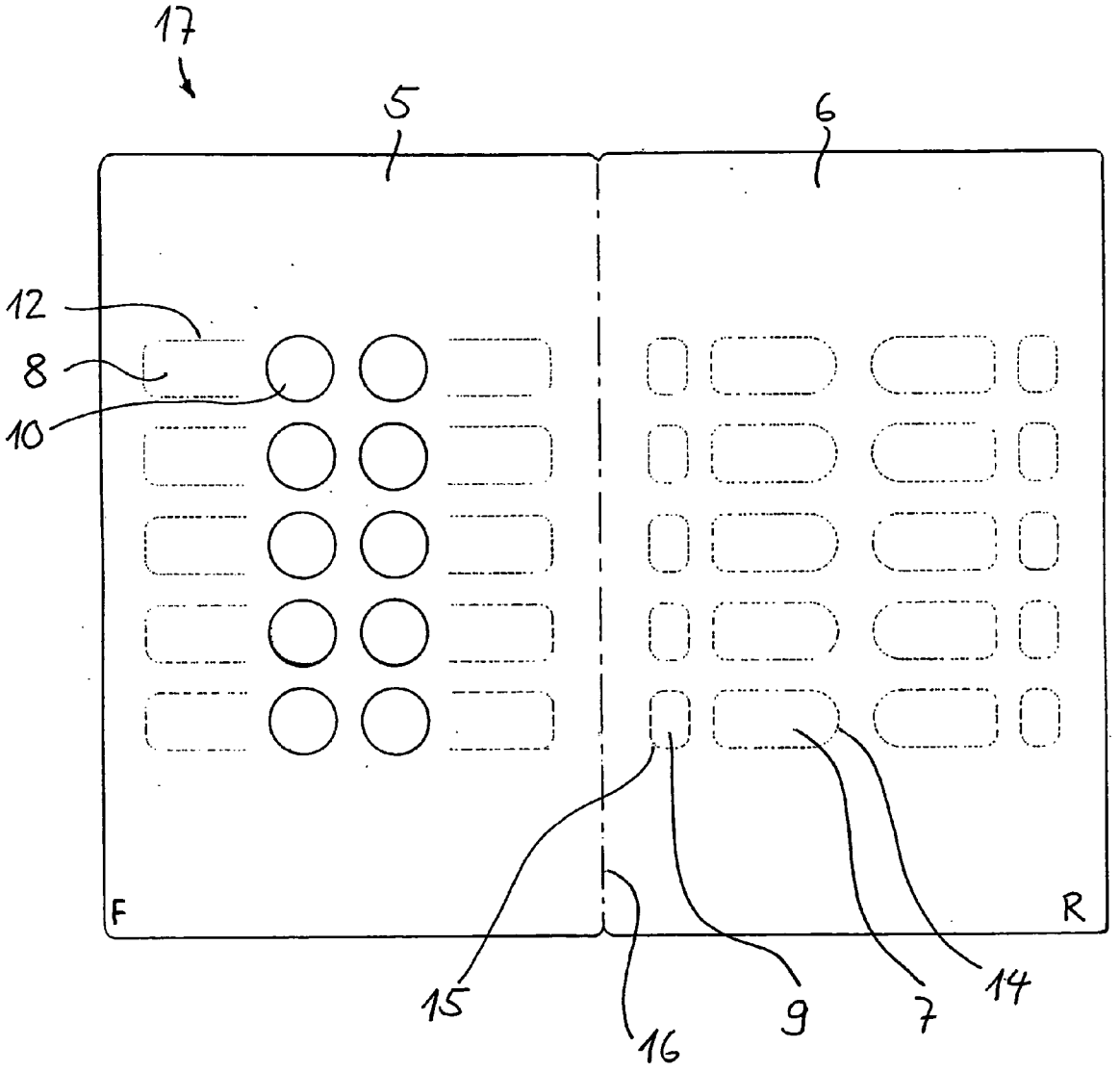


Fig.2

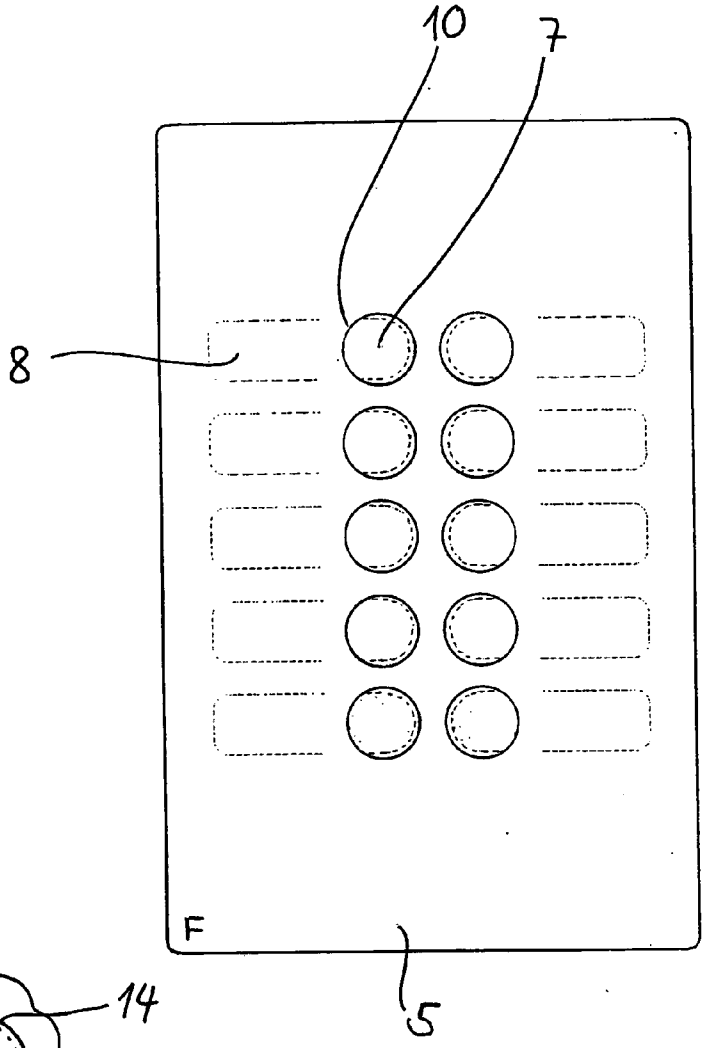


Fig.2a

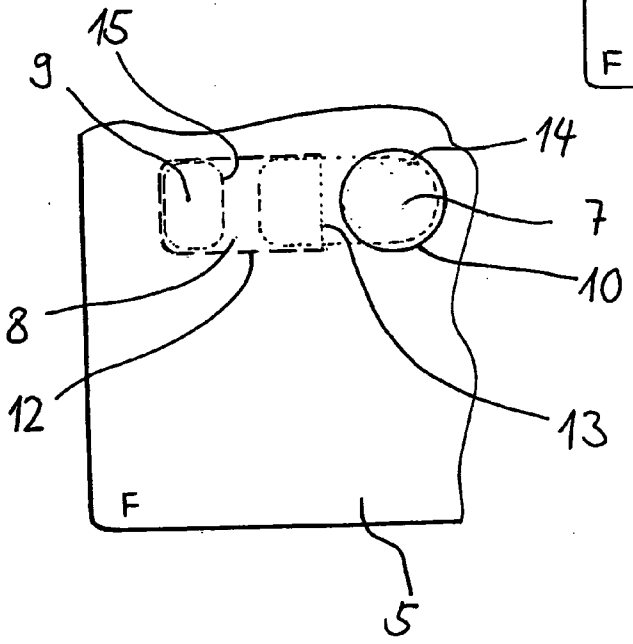


Fig.3

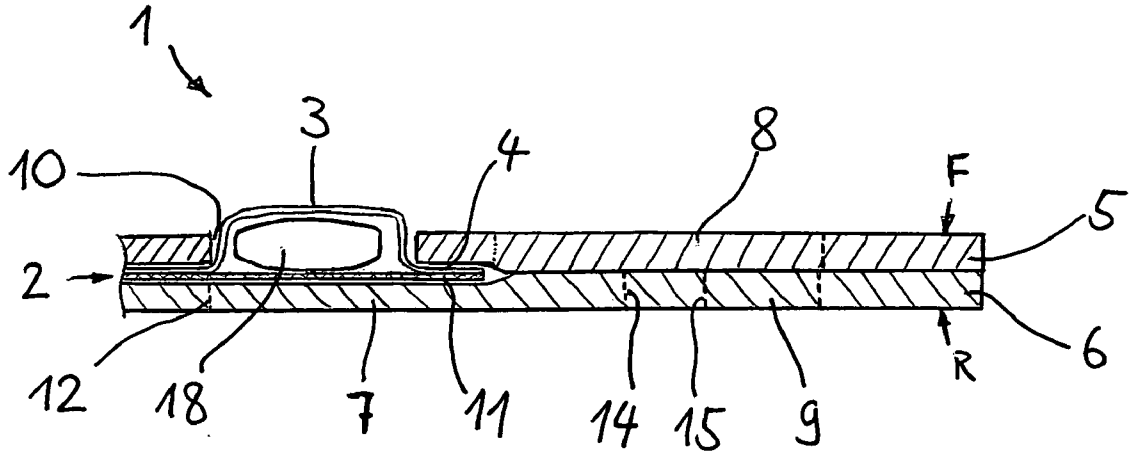


Fig.4

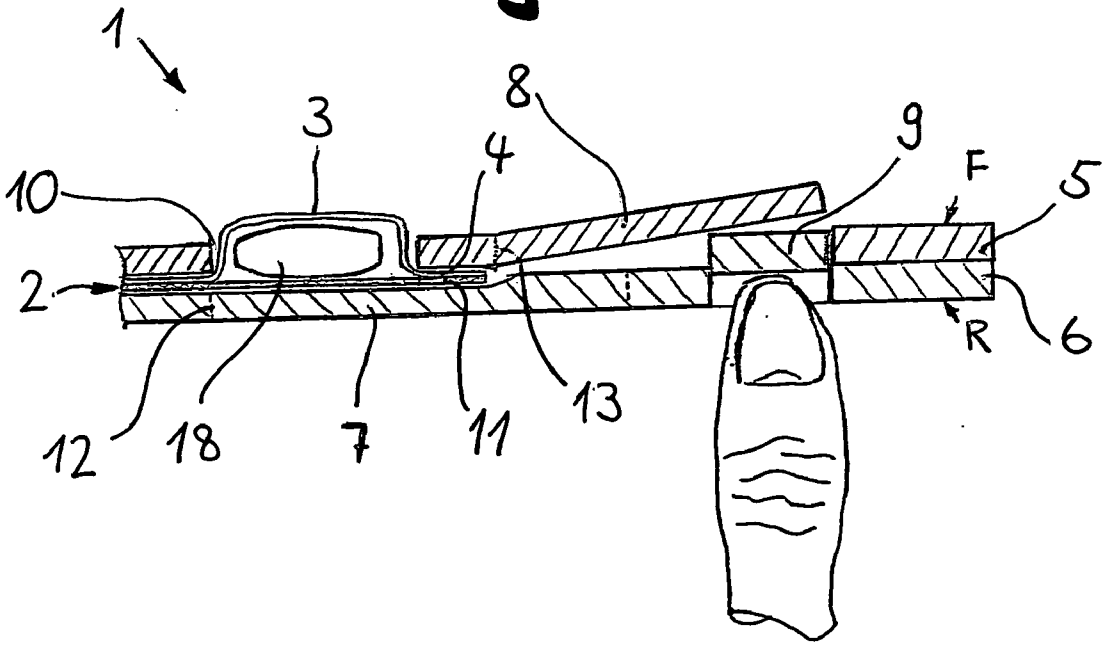


Fig. 5

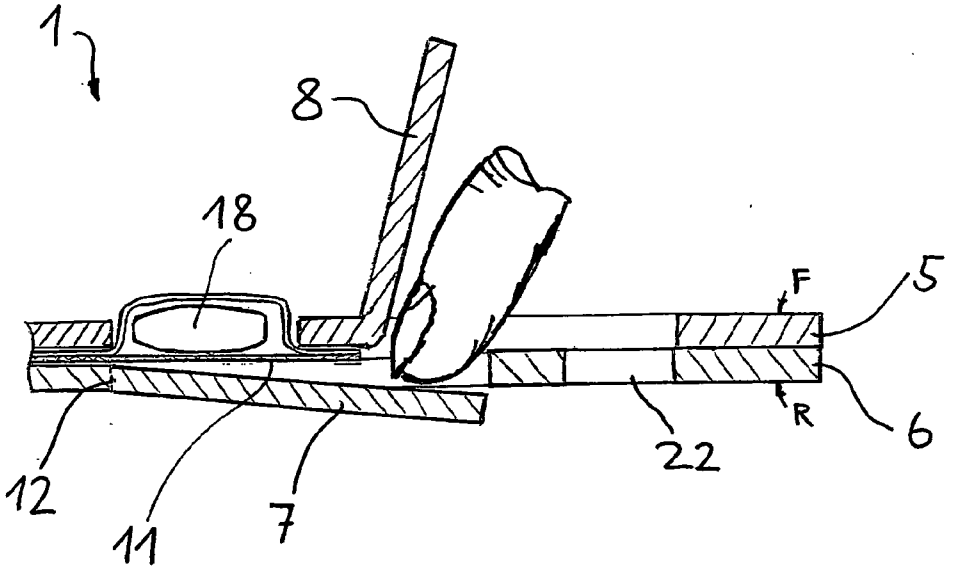


Fig. 6

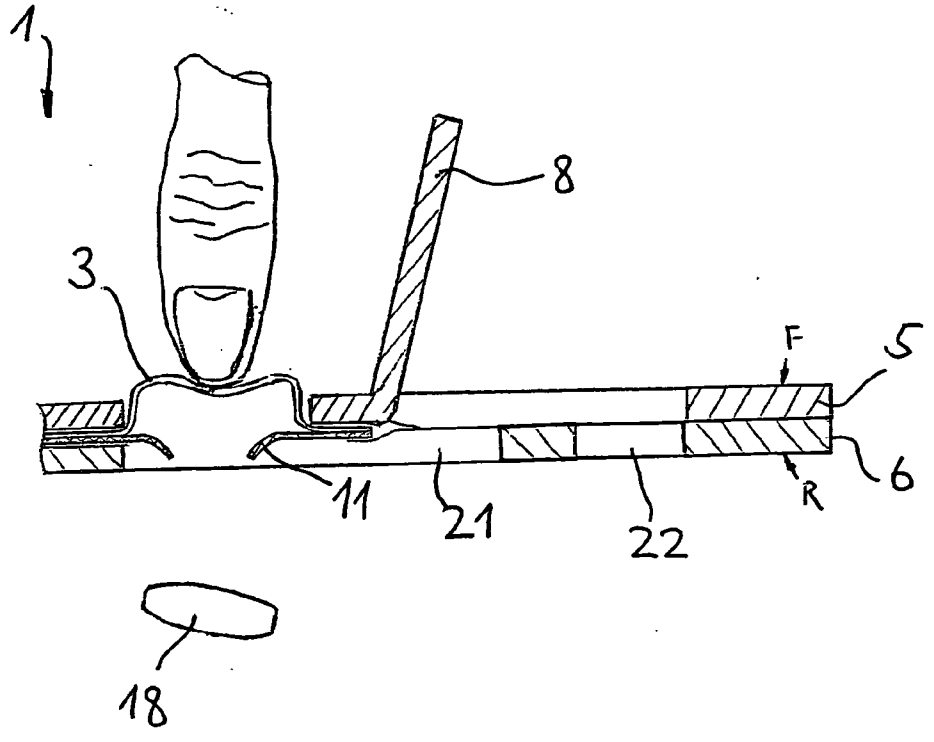


Fig. 7

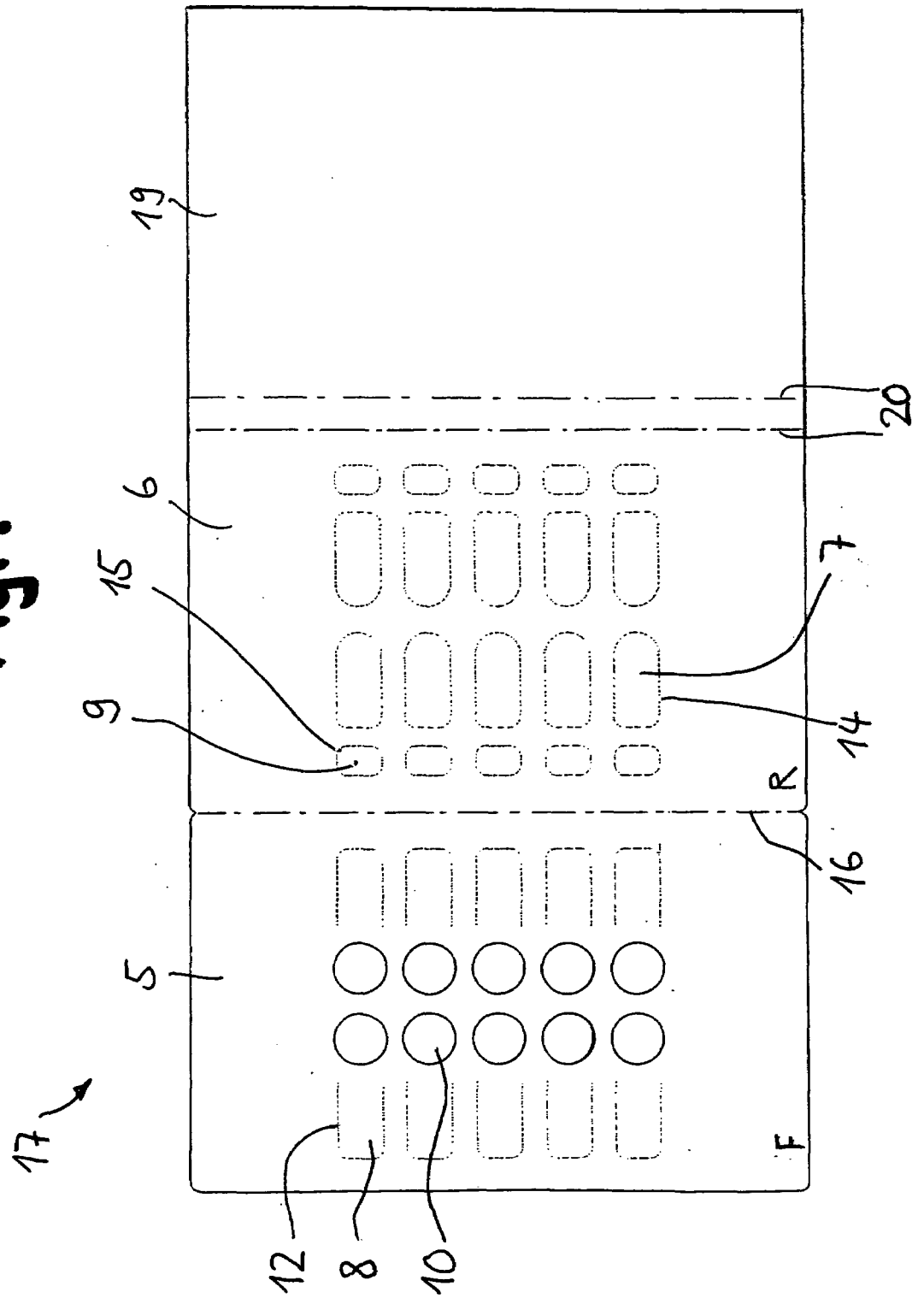


Fig.8

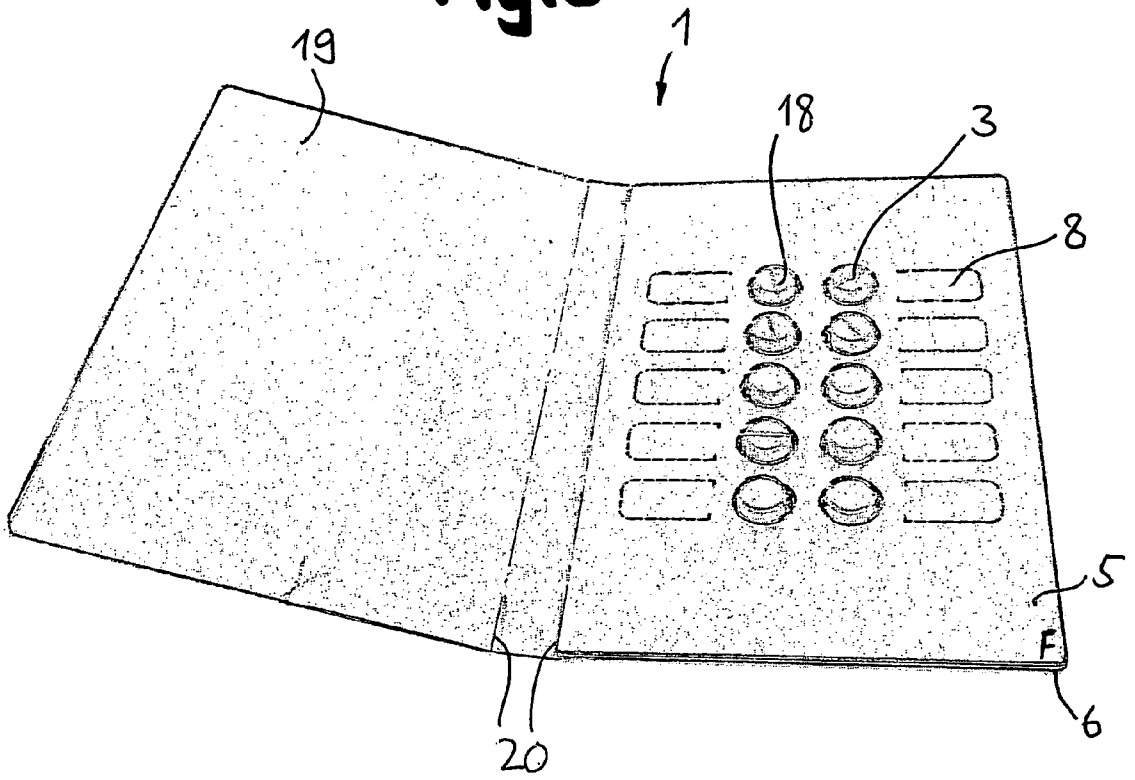


Fig.9

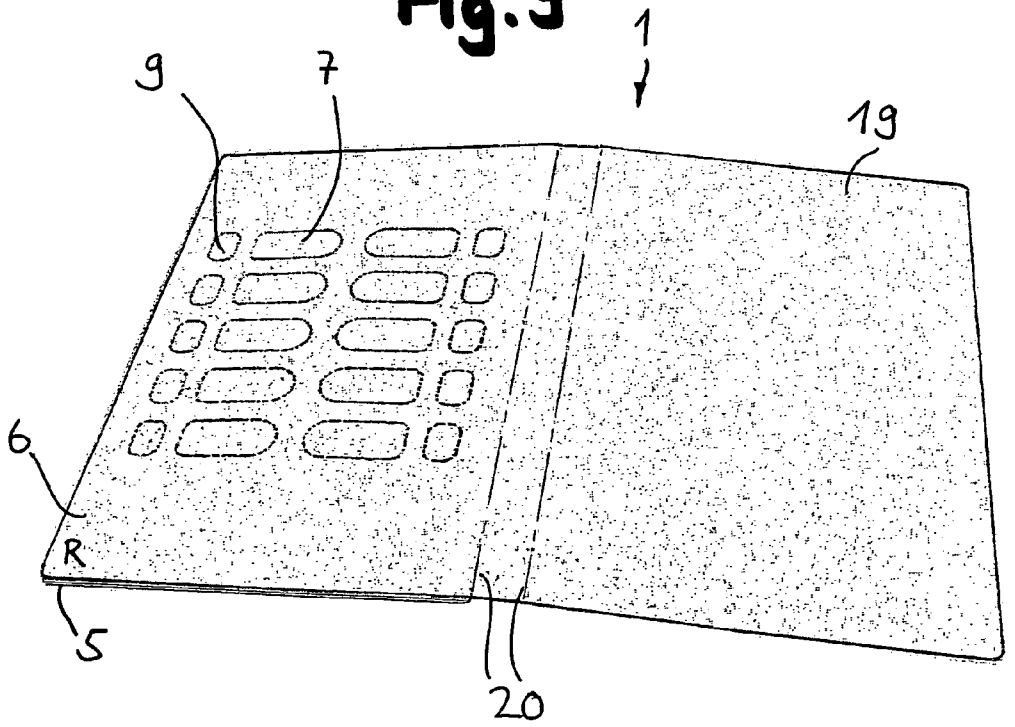


Fig.10

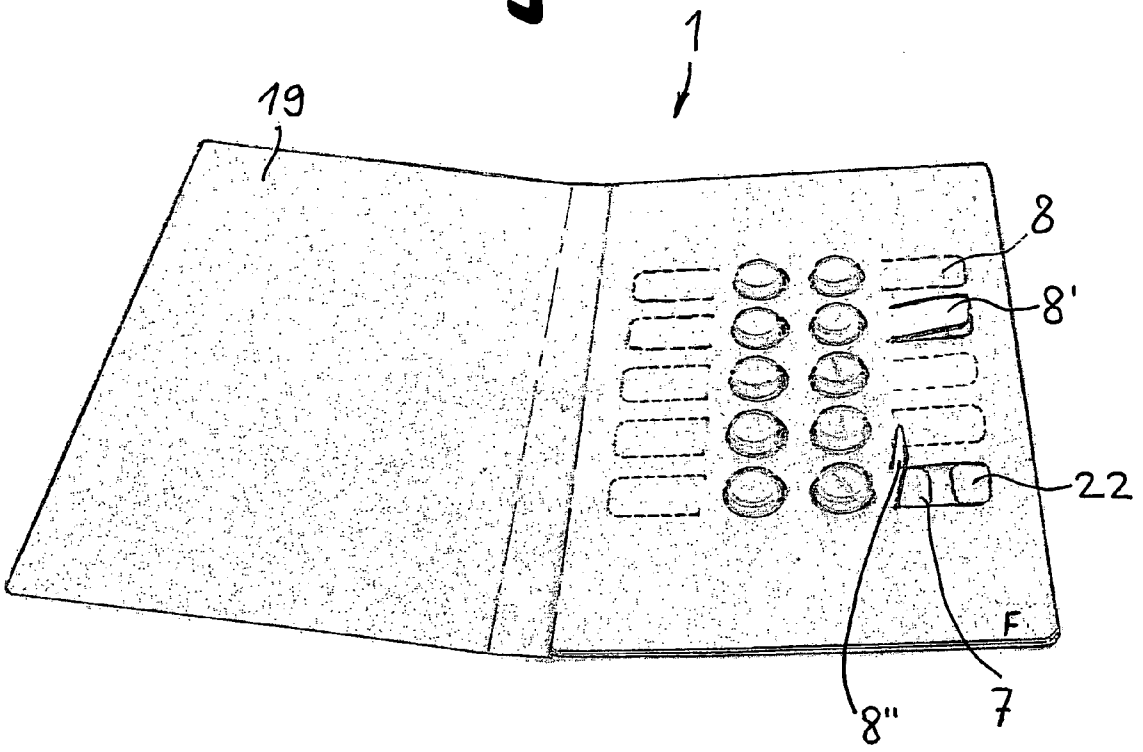


Fig.11

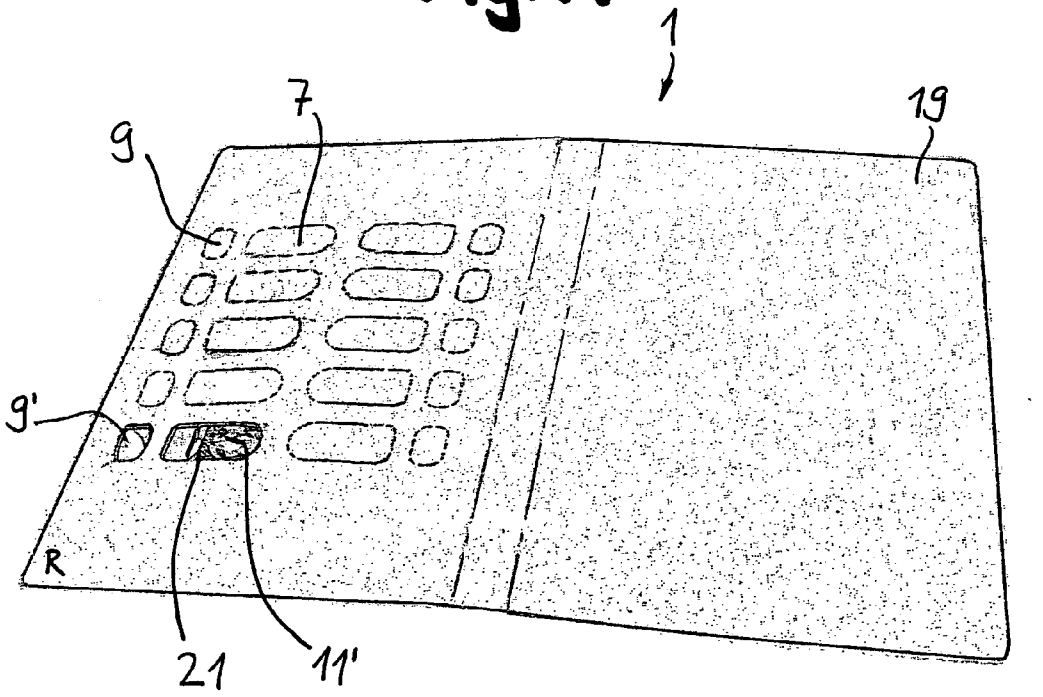


Fig.12

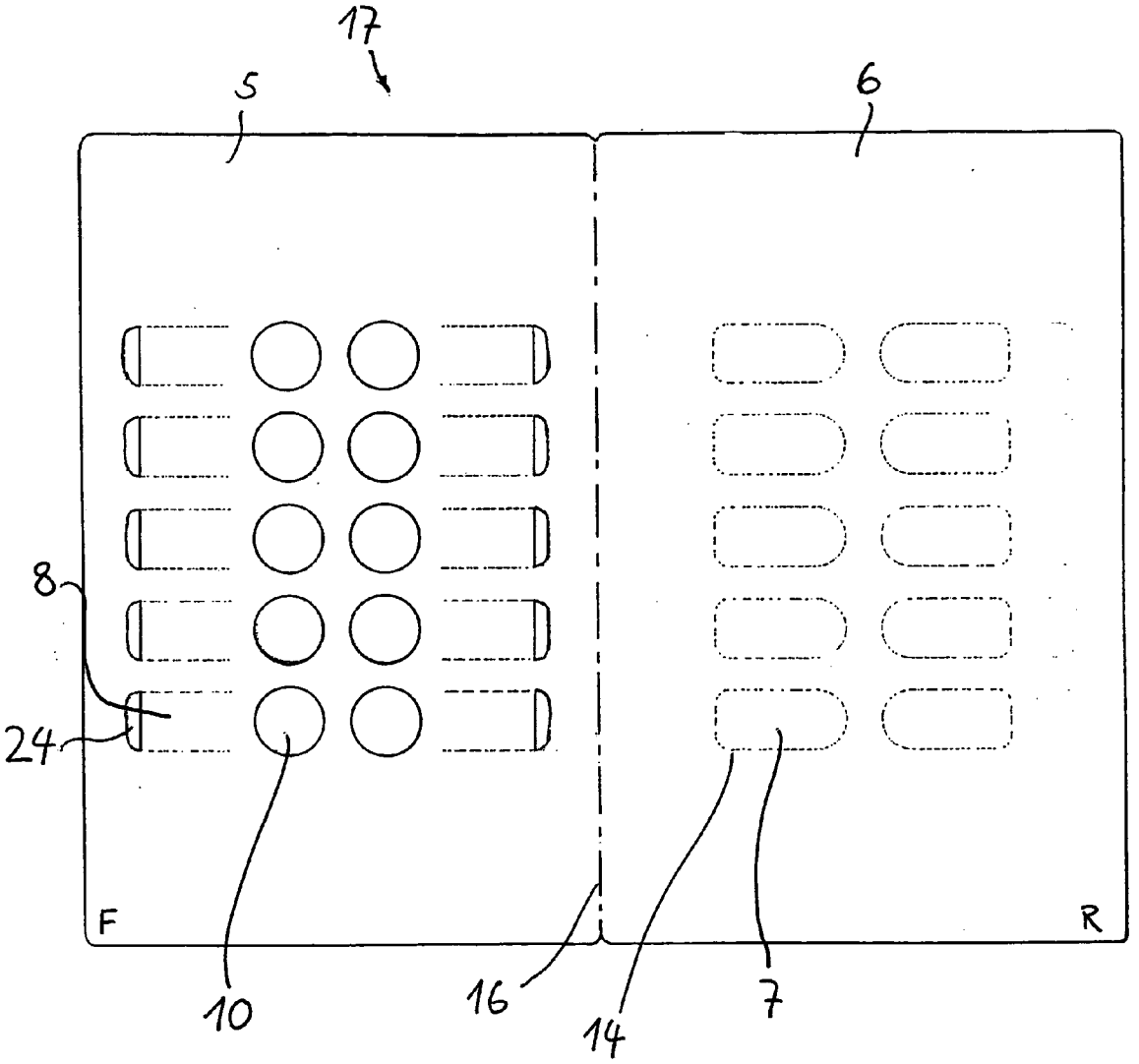


Fig.13

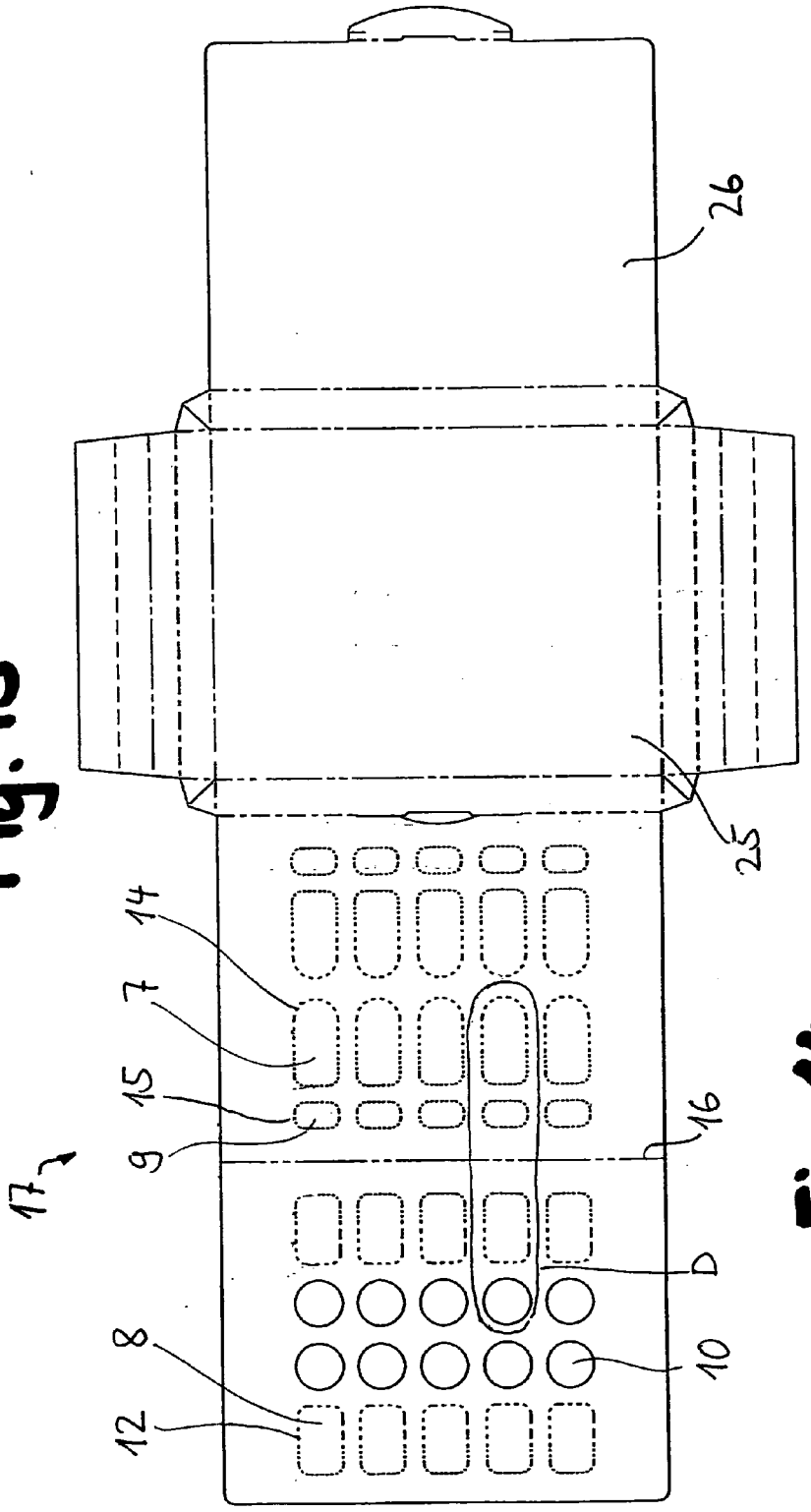
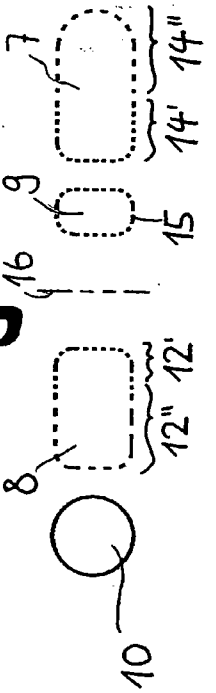


Fig.14



BLISTER PACK

[0001] The invention relates to a blister pack having the features of the preamble of Claim **1**. Blisters for packaging medicaments in the form of tablets, capsules, dragees, etc. can be inserted into such blister packs. The blisters comprise a carrier sheet, which is provided with cavities for accommodating articles, and a flat, pressure-sensitive cover sheet. For the purpose of removing the articles, the latter are pushed out through the cover sheet in a push-out region assigned to the cavity. These packs are intended to make it more difficult for children to gain access to the articles.

[0002] Numerous blister packs which tackle the problem of childproofing are already known. A generically comparable blister pack is described, for example in US 2004/0188312 A1. The blister pack in this document essentially comprises a first portion, which forms a front side and has cutouts for accommodating the cavities of the blister, a second portion, which forms the rear side, and a central portion, which is arranged between the blister and the second portion. Removable blocking segments are arranged on the second portion and each cover a cutout for articles and/or a corresponding push-out region of a cover sheet of the blister. These blocking segments are fixed by adhesive bonding to likewise detachable individual segments of the central portion. D-shaped push-out segments (push tabs) are arranged on the first, front portion. By virtue of pressure being applied to this D-shaped segment, a blocking segment can be partially detached from the rear-side portion and, finally, torn off. The push-out region is then exposed and the articles can be pushed out. In order that the push-out segments cannot readily be pressed in, they are protected on the rear side of the blister pack by tear-off segments. These segments are arranged in rows on the second portion, each segment being assigned to a respective push-out segment. It is only once such a segment has been torn off that it is possible to press in a push-out segment in order for the blocking segment to be partially pushed out in accordance with the functional description. For further safeguarding, a tear-off strip is provided at a front end of the row of tear-off segments, and this strip is to be torn off first of all in order to release the adjoining segments. In respect of childproofing, it has been found that at least the tear-off strip and the adjoining tear-off segments in the second, rear-side portion can be torn off comparatively quickly by children. A further disadvantage is that, on account of a double layer being used on one side of the blister, the outlay in respect of material is high. Production of the blister pack has proven to involve high outlay in particular on account of the necessary adhesive-bonding operations.

[0003] It is therefore an object of the present invention to avoid the disadvantages of the prior art, in particular to provide a blister pack of the type mentioned in the introduction which satisfies stringent childproofing requirements. Furthermore, the blister pack is to be cost-effective and straightforward to produce.

[0004] These objects are achieved according to the invention by a blister pack having the features of Claim **1**. The essential components of the blister pack are the base portion and the blister portion, which are each preferably of planar design. The outlay in respect of material used for the blister pack is thus low. Depending on the use purpose, the blister could be configured as a blister card, as a blister wallet (at least one cover portion would be necessary for this purpose) or even as a box. Using the blocking segments and safeguarding segments of the design according to the invention ensures a high level of childproofing. Since it is only after the safeguarding segments have been at least partially detached that it is possible to apply pressure for the first step for detaching the blocking segments from the base portion, the functioning of the opening operation for pushing out articles is difficult for children to understand. A further advantage of the blister pack is that the base portion and the blister portion need only be connected to one another in an outer peripheral region. This fixing may preferably be constituted by adhesive bonding. The adhesive bonding here preferably extends all round the periphery. There are not usually any adhesive bonds in the region of the blocking segments and safeguarding segments.

[0005] The safeguarding segments can be at least partially detached from the plane of the blister portion by pressure being applied from the rear side. Of course, it would also be possible for the safeguarding segments to be detached, if need be, in other ways. As an alternative, it would be conceivable, for example, for each safeguarding segment to be adjoined by a cutout in order for the safeguarding segment to be peeled off. Such cutouts would be configured such that they would allow fingernails to access a peripheral region of a safeguarding segment.

[0006] In a first embodiment, the safeguarding segments may be swing-action portions which can be swung up out of the plane of the blister portion. A swing-action portion may be a type of lug which is easy to grip and swing up.

[0007] The swing-action portions may be formed in each case by approximately U-shaped perforation lines. However, other non-continuous weakening lines would also be conceivable in principle. The ends of these perforation lines or weakening lines define a swing-action line around which the swing-action portion can be swung up. The swing-action line could be predefined by a folding line in order for the swing action to be improved.

[0008] The safeguarding segments could be formed by continuous perforation-line arrangement which is subdivided into two perforation-line portions of different strengths. A first perforation-line portion has weaker perforations, as a result of which the safeguarding segment in this region can be easily pressed in for a first peel-off step. A second perforation-line portion has—in comparison with the first perforation-line portion—stronger perforations. This perforation-line arrangement results in advantageous operational guidance since the user, first of all, would intuitively manipulate the safeguarding segment in the region of the weaker perforations. The stronger perforations in the second perforation-line portion serve merely to allow a partially swung-up safeguarding segment to be torn off completely. The perforation-line arrangement can be achieved, for example, such that the crosspieces between the perforation cuts for the weaker perforations are shorter than the corresponding crosspieces for the stronger perforations.

[0009] Of course, it is not imperative for the swing-action portions to be configured merely such that they can be swung up. If need be, the safeguarding segments, in particular the swing-action portions, could also be formed by continuous perforation lines in each case. For example, the ends of the U-shaped perforation lines could be connected by weakening crosspieces, as a result of which, once it has been swung up, the swing-action portion could easily be detached or torn off completely.

[0010] It may be advantageous if a respective swing-action portion can be swung up around a swing-action line which, as seen in plan view, runs preferably approximately centrally through the blocking segment. This swing-action line, however, need not run precisely over a centre line of the blocking segment. The swing-action line may define a front end of an overlapping region between the blocking segment and safeguarding segment. This overlapping region defines an access surface area to the blocking segment, which is preferably of sufficient size to allow this region to be manipulated efficiently by a finger. Handling can be simplified in this way and, in particular, it is easier for the elderly to use the pack.

[0011] In order to render the opening operation more difficult so as to increase the childproofing, it may be expedient if the base portion also has push-out segments which are located beneath the safeguarding segments and can be pressed in from the rear side. By virtue of pressure being applied to a respective push-out segment, the safeguarding segment can be partially detached, in which case—in particular if it is configured as a swing-action portion—it can be swung out. If the childproofing requirements are less stringent, it would also be possible to provide just corresponding cutouts instead of push-out segments.

[0012] It may be advantageous if, as seen in plan view, a push-out segment is enclosed by a safeguarding segment in each case in order to be fully covered, a push-out segment abutting in planar fashion in a front safeguarding-segment end region which is directed away from the swing-action line.

[0013] It may be particularly advantageous if, as seen in plan view, a safeguarding segment covers in each case part of a blocking segment and an entire push-out segment. Such an arrangement has an advantageous effect on the handling of the blister pack.

[0014] The blocking segments and/or the push-out segments may be formed in each case by continuous perforation lines or other weakening lines. It is, of course, also conceivable, however, for example for the push-out segments to be designed as swing-action parts. In this case, they could be predefined by a U-shaped perforation line.

[0015] The perforation lines for the blocking segments and for the push-out segments may be separated from one another. Since the blocking segments and the push-out segments are thus designed as separate segments on the base portion, it is ensured that unintended multiple openings can be prevented.

[0016] The blister portion and the base portion may be designed as separate planar components. It may also be advantageous, however, if the blister pack comprises a single blank made of cardboard or cardboard laminate. Of course, it would also be possible for the blank to consist of plastic.

[0017] The respective segments, i.e. the blocking segments, the safeguarding segments and the push-out segments, may be arranged in a mirror-symmetrical manner, as a result of which commercially available blisters with two parallel rows of cavities can easily be packaged in an advantageous manner.

[0018] A further aspect of the invention relates to a blank for the previously described blister pack. The blank has a blister portion and a base portion, which are separated from one another by a folding line. All that is thus required in order for the blister to be inserted in a sandwich-like manner is for the base portion to be swung over around the blister portion. Of course, the blank could also have a cover portion, which would cover the blister portion in order to protect the cavities. This cover portion would likewise be separated by a folding line from the blister portion or from the blister/base portion (blister wallet). In addition, the cover portion could be adjoined by a second cover portion, which could also cover the base portion.

[0019] Further individual features and advantages of the invention can be gathered from the following description of the exemplary embodiments and from the drawings, in which:

[0020] FIG. **1** shows a blank for a blister pack according to the invention,

[0021] FIG. **2** shows a plan view of a blister pack made from the black according to FIG. **1** (without any blister),

[0022] FIG. **2***a* shows an enlarged illustration of part of the blister pack according to FIG. **2**,

[0023] FIG. **3** shows a partial section through a blister pack in the rest position with a blister,

[0024] FIG. **4** shows the blister pack according to FIG. **3** once a push-out segment has been pressed in,

[0025] FIG. **5** shows the blister pack according to FIG. **4** following the application of pressure to a blocking segment, with the safeguarding segments swung up,

[0026] FIG. **6** shows the blister pack according to FIG. **5** in the removal position,

[0027] FIG. **7** shows a blank for a blister pack according to a further exemplary embodiment,

[0028] FIG. **8** shows a perspective illustration of a blister pack produced from the blank according to FIG. **7**, with a view of the front side,

[0029] FIG. **9** shows a perspective illustration with a view of the rear side of the blister pack according to FIG. **8**,

[0030] FIG. **10** shows the blister pack according to FIG. **8**, but with safeguarding segments partially swung up,

[0031] FIG. **11** shows the blister pack according to FIG. **9**, with an article removed from one position (removal position),

[0032] FIG. **12** shows a blank for a blister pack according to a further exemplary embodiment,

[0033] FIG. **13** shows a blank for a blister pack according to a further exemplary embodiment, and

[0034] FIG. **14** shows an enlarged illustration of the detail D from FIG. **13**.

[0035] FIG. **1** shows a blank **17** for a blister pack. The blank **17** comprises a blister portion **5** and a base portion **6**, which are separated from one another by a folding line **16**. A blister can be enclosed in a sandwich-like manner between these portions by virtue of the latter being swung over around the folding line **16**. F here is used to indicate a front side and R is used to indicate a rear side. The blister portion **5** can be seen to contain a plurality of circular cutouts, which can accommodate cavities of a blister. Safeguarding segments **8**, each formed by U-shaped perforation lines, are arranged laterally in each case alongside each cutout **10**. The base portion **6** contains blocking segments **7** and push-out segments **9**, which are each predefined by continuous perforation lines **14** and **15**. Of course, it would also be conceivable for a push-out segment to be designed merely as a swing-action portion. In this case, a non-continuous perforation line would be provided, the ends of this perforation line predefining a swing-action line in each case.

[0036] FIG. **2** shows a plan view of the front side F of the blister portion **5**, the base portion having been swung over around the folding line. Through the cutout **10**, it is possible to see part of the blocking segments **7**, which block a push-out region for articles in a cover sheet of a blister. The way in which the individual segments are arranged one above the other in the swung-over state can be gathered from the detail

illustrated in FIG. **2***a*. To give a better understanding, the actually concealed or partially concealed perforation lines **15** and **14**, respectively, are likewise illustrated here. It can be seen that the push-out segment **9** is enclosed by the safeguarding segment **8** and is thus fully covered. A front region of the safeguarding segment **8** here lies in planar fashion over the push-out segment **9**. The ends of the perforation line **12** are connected to one another by a swing-action line designated **13**. This swing-action line **13** may be formed, for example, by a folding line made by appropriate tools. Such treatment is not absolutely necessary, however, since a swing-action line would form automatically when the safeguarding segment **8** is swung up. The safeguarding segment **8** overlaps the blocking segment, the swing-action line **13** running approximately centrally through the blocking segment **7**. The overlapping region between the blocking segment **7** and safeguarding segment **8** defines an access surface area which should be of sufficient size to allow pressure to be efficiently applied to the blocking segment **7** by a finger in this region. The functioning for opening the blister pack will be described hereinbelow with reference to FIGS. **3** to **6**.

[0037] FIG. **3** shows a blister pack **1** for a blister **2**, in the case of which the blister has been inserted in a sandwich-like manner between the blister portion **5** and the base portion **6**. In each case one cavity **3** of the blister is guided through the cutout **10**. The blister **2** essentially comprises a carrier sheet **4**, which is provided with a plurality of cavities **3** for accommodating articles **18**, and a cover sheet **11**, which closes the cavities. The carrier sheet **4** usually consists of a transparent or non-transparent plastic; the cover sheet **11** consists, for example, of aluminium, paper, a laminate or some other suitable material through which articles can be pushed out. From the rest position according to FIG. **3**, it can be seen that the blocking segment **7** covers a respective push-out region of the cover sheet **11** for the article **18**. For the purpose of detaching the blocking segment **7** in order to produce a removal position, the blocking segment would have to be partially detached from the base portion in a first step by pressure being applied from the front side F, as a result of which, in a second step, it could be gripped for removal purposes (cf. FIG. **5**). It can be seen, however, that this is prevented by the safeguarding segment **8** in the blister portion **5**.

[0038] As can be gathered from FIG. **4**, a user first of all has to apply pressure to the push-out segment **9**, for example using a finger, from the rear side R, as a result of which the safeguarding segment **8** is partially detached from the plane of the blister portion **5**. The safeguarding segment **8** can be seen to be a lug-like swing-action portion which can be swung up around the swing-action line designated **13**. This swing-action portion can then be swung up further from the front side F, as a result of which the blocking segment **7** is partially freed. The blocking segment can then be pushed out on the freed side from the front side F. This step is illustrated in FIG. **5**. By pressure being applied to the blocking segment **7** by a finger via the overlapping region, in a first step, the blocking segment is partially detached from the base portion **6**. It can be seen that the blocking segment **7** is usually only swung up to a slight extent here. Following this first step, it would then be possible to grip the free end of the blocking segment **7** and tear off the blocking segment. The push-out region in the region of the cover sheet **11** for pushing out the article **18** would then be exposed. FIG. **5** also shows, the push-out segment has been completely removed, to form a through-opening **22** in the base portion **6**. It would then be conceivable—if the childproofing requirements are not as stringent—for such openings (**22**) to be provided, instead of the push-out segments, even in the rest position.

[0039] FIG. **6** shows the blister pack **1** in the removal position. It can be seen that the article **18** has already been pushed out through the cover sheet **11**. It can also be seen that the blocking segment has been completely removed. It is obvious to a person skilled in the art, however, that it would not be absolutely necessary for the blocking segment to be completely detached in this way in order for the article to be removed. It would suffice for the blocking segment to be swung out.

[0040] The blank **17** according to FIG. **7** differs from the blank according to FIG. **1** merely by the fact that a cover portion **19** for covering the cavities is provided in addition. The cover portion **19** here is connected to the base portion **6** via an articulation strip. The articulation strip is predefined by the two folding lines **20**.

[0041] FIGS. **8** and **9** show a front view and a rear view of an open blister pack **1**, use having been made here of the blank according to preceding FIG. **7**. It can be seen from FIG. **8**, for example, that tablets **18** have been inserted in each case in the cavities **3**. It would, of course, also be possible for the blister to accommodate other articles for medical use or other applications.

[0042] FIG. **10** shows safeguarding segments **8** which have been swung up to different extents. A safeguarding segment designated **8'** has been swung up merely to a slight extent; a safeguarding segment designated **8"** has been swung up more or less through an angle of 90°. In the position assigned to **8"**, it is possible to see the opening **22**, which has been created by the at least partial removal of the push-out segment, and part of the blocking segment **7**. FIG. **11** illustrates a push-out segment which is designated **9'** and, rather than having been completely removed, has merely been swung over. In contrast, the blocking segment has been completely removed, and this gives a free view of the blister through the opening **21**. FIG. **11** thus shows, for example, a cover sheet **11'** which has been destroyed as a result of having been pushed out.

[0043] A further exemplary embodiment of a blank **17** for a blister pack is shown in FIG. **12**. In this case, there are no push-out segments provided in the base portion. The blocking segments **7** in the base portion **6**, however, correspond essentially to those of the previous exemplary embodiments. The safeguarding segments **8** thus cannot be detached from the plane of the blister portion **5** by pressure being applied from the rear side. The removal of the safeguarding segments **8** is made possible in FIG. **12** with the aid of cutouts **24**. It can be seen that each safeguarding segment is adjoined laterally by a cutout **24**, which allows the safeguarding segment **8** to be peeled out using fingernails.

[0044] FIG. **13** shows a blank **17** for a box-like blister pack. The blank **17** has a box-base portion **25** which is adjoined by web portions, which are separated from one another laterally in each case by folding lines, to form a prismatic hollow side wall. For closing the box, use is made of a cover box portion **26**. Such boxes are known (albeit without childproofing) for example from WO 2006/040230. It can also be seen from FIG. **13** that the safeguarding segment **8** is formed by a continuous perforation line **12**, as a result of which it can be torn off. The perforation lines **12**, **14** and **15**, then, are of special configuration (cf. FIG. **14**).

[0045] FIG. **14** shows details of the perforation lines for the individual segments **7**, **8** and **9**. The safeguarding segment **8** is

subdivided into two perforation-line portions of different strengths. A first perforation-line portion **12'** has weaker perforations, as a result of which the safeguarding segment in this region can easily be pressed in for a first peel-off step. A second perforation-line portion **12"** has—in comparison with the first perforation-line portion **12'**—stronger perforations. These perforations are designed such that this region, rather than being pressed in, can only be torn off. The stronger perforations in the second perforation-line portion **12"** serve to allow a partially swung-up safeguarding segment to be torn off completely. It can be seen that this arrangement is achieved in that the crosspieces between the individual perforation cuts for the weaker perforations **12'** are shorter than the corresponding crosspieces for the stronger perforations **12"**. It can be seen that the blocking segment **7** is likewise subdivided into two perforation-line portions **14'** and **14"** of different strengths.

1. Blister pack (**1**) for a blister (**2**), having a blister portion (**5**), which forms a front side (F), and a base portion (**6**), which forms a rear side (R), between which the blister can be, or is, inserted in a sandwich-like manner, it being the case that the blister portion (**5**) has cutouts (**10**) for accommodating the cavities (**3**) of the blister (**2**), and that the base portion (**6**) contains detachable blocking segments (**7**) which each cover a push-out region for articles (**18**) in a cover sheet (**11**) of the blister in a rest position and, in order to produce a removal position, can be partially detached from the base portion in a first step by pressure being applied from the front side (F), as a result of which, in a second step, a partially detached blocking segment (**7**) can be gripped for removal purposes, characterized in that the blister portion (**5**) contains safeguarding segments (**8**) which overlap the blocking segments (**7**) in each case and can be at least partially detached from the plane of the blister portion (**5**) preferably by pressure being applied from the rear side, the safeguarding segments (**8**) being configured such that, in the rest position, they prevent access to the blocking segments (**7**), and it is only after the safeguarding segments (**8**) have been at least partially detached that they allow pressure to be applied for the first step for detaching the blocking segments (**7**) from the base portion (**6**).

2. Blister pack according to claim **1**, characterized in that the safeguarding segments (**8**) are formed in each case by continuous perforation lines (**14**, **15**), or in that the safeguarding segments (**8**) are swing-action portions which can be swung up out of the plane of the blister portion (**5**).

3. Blister pack according to claim **1**, characterized in that the safeguarding segments are swing-action portions (**8**) which are formed by approximately U-shaped perforation lines (**12**).

4. Blister pack according to claim **3**, characterized in that a respective swing-action portion (**8**) can be swung up around a swing-action line (**13**) which, as seen in plan view, runs preferably approximately centrally through the blocking segment (**7**).

5. Blister pack according to claim **1**, characterized in that the base portion (**6**) also has push-out segments (**9**) which are located beneath the safeguarding segments (**8**) and can be pressed in for the partial detachment of the safeguarding segments (**8**), in particular for swinging the latter out from the rear side (R).

6. Blister pack according to claim **5**, characterized in that, as seen in plan view, a push-out segment (**9**) is enclosed by a safeguarding segment (**8**) in each case in order to be fully covered, the push-out segment (**9**) preferably abutting in planar fashion in an end region of the safeguarding segment (**8**).

7. Blister pack according to claim **5**, characterized in that, as seen in plan view, a safeguarding segment (**8**) covers in each case part of a blocking segment (**7**) and an entire push-out segment (**9**).

8. Blister pack according to claim **1**, characterized in that the blocking segments (**7**) and/or the push-out segments (**9**) are formed in each case by continuous perforation lines (**14**, **15**).

9. Blister pack according to claim **1**, characterized in that the perforation lines (**14**, **15**) for the blocking segments (**7**) and the push-out segments (**9**) are separated from one another.

10. Blister pack according to claim **1**, characterized in that it comprises a single blank made of cardboard or cardboard laminate.

11. Blank for a blister pack according to claim **1** characterized in that the blister portion (**5**) and the base portion (**6**) are separated from one another by a folding line (**16**).

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