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(54) Intimate napkin

(57) An intimate napkin, comprising a substantially planar and elongated frame (3,3') having an outer impervious material layer, an absorbing core (2) inserted in the frame (3,3') and an adhesive layer applied to the impervious material layer, the adhesive layer comprising at least five stretches of adhesive (4) substantially spaced apart, is disclosed.

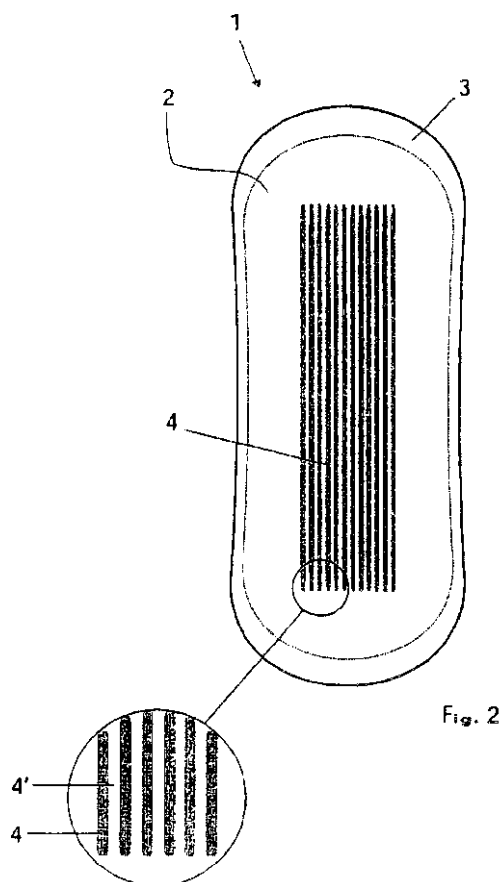


Fig. 2

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Description

[0001] The present invention is directed to an intimate napkin provided with an adhesion member to be attached to the intimate undergarment, which member is comprised of adhesive lines.

Description of the State of the Art

[0002] Usually, intimate napkins are provided with only one adhesive strap to attach the intimate napkin to the panties or any other undergarment. The adhesive strap has a considerable area in relation to the size of the napkin.

[0003] However, this arrangement presents several shortcomings, such as those listed below.

[0004] First of all, the single adhesive strap causes the napkin to behave like a rigid body when attached to the panties, preventing same to move. Since there is only one adhesive strap, it is impossible to move only certain regions of the napkin, and a trend of shearing efforts of the napkin in relation to the panties, known as "shear", causes the napkin to be fully detached from the panties.

[0005] Secondly, the process for applying the adhesive element having a single strap is complicated and requires constant adjustments and interferences in the applying machine so that a satisfactory operation can be performed. Even though, failures are frequent in this process, in view of the formation of certain regions where the adhesive is not applied. Despite the fact that most of the time such regions do not prevent the correct attachment of the napkin to the panties, the result is a sense of lack of quality, which might discourage the use of the product.

[0006] Thirdly, the displacement of the adhesive in relation to the napkin might occur due to failures when the same is applied. The displacement forms bubbles at the time the adhesive protecting film is removed, seriously jeopardizing the ability of the napkin to adhere to the panties and thus the efficiency thereof.

[0007] A known technique which is relevant to the present invention is described in document WO00/37015, which discloses an absorbent product, such as an intimate napkin, comprising a protecting film of the product adhesive strap adhered through a pressure sensitive adhesive to the outer end of the product. In order to enable the easy removal of the protecting film and keep suitable levels of the product fixation to the user's undergarment, the strength between the protecting film and the outer end of the product ("peel") should range between 0.5 and 1 Newton.

Objects of the invention

[0008] The object of the present invention is to provide an intimate napkin having a multiplicity of thin adhesive lines, thus allowing a greater movement of the napkin when in use, however preventing the same from being detached from the user's panties, presenting a more aesthetically elaborated appearance and thus providing a greater reliability in the productive process thereof.

Brief Description of the Invention

[0009] The objects above are attained by an intimate napkin which is comprised of a substantially planar and elongated frame having an outer layer made of impervious material, an absorbent core inserted in the frame and an adhesive layer applied to the impervious material layer, the adhesive layer comprising at least five stretches of adhesive substantially spaced apart.

[0010] Usually, the napkin comprises a layer of pervious material or top sheet, which is fluid permeable and the function of which is to allow the passage of the menstrual fluid toward the absorbent core and thus to keep the fluid away from the user's body. It can be constituted of a non-woven layer or perforated plastic film or any material that may perform this function.

[0011] Usually, the napkin is also comprised of an outer layer of impervious material or lining sheet, which is impervious or resistant to the passage of liquids and used to prevent the fluid absorbed by the absorbent core from leaking. It may be comprised of a non-perforated plastic sheet or any other material having such features. The lining sheet may also comprise a pervious material such as a non-woven and other material that might play this role known by those skilled in the art.

[0012] The absorbent core is formed of cellulosic or textile synthetic fibers, such as rayon, polyester and the like. Its purpose is to contain the vaginal exudates. In the assumption the absorbent core contains superabsorbent material, said material can have a broad range of particle sizes and be distributed in a number of manners, for example, as a layer, film, or individual particles. As an example of superabsorbent material, sodium polymethacrylate or any other suitable superabsorbent material can be utilized.

[0013] The adhesive layer comprises at least five stretches of adhesive substantially spaced apart.

[0014] Optionally, the napkin comprises two tabs projected substantially outwardly from two main ridges of the frame, and it may have the attaching adhesive formed by adhesive lines.

[0015] The napkin object of the present invention can undergo shearing efforts without being detached from the user's panties, does not require much adhesive without having a corresponding reduction in the attachment ability, is easy to apply through several lines, its manufacturing procedure is significantly easier and reliable than in the case where a single wide adhesive line is applied, and presents an aesthetic effect that pleases the user, thus encouraging the purchase of the napkin.

Brief description of the drawings

[0016] The present invention will be described below in more details based on an example of execution shown in the drawings. The figures depict:

Figure 1 - a top view of a first variation of the intimate napkin of the state of the art;

Figure 2 - a top view of a first variation of the intimate napkin object of the present invention;

Figure 3 - a top view of a second variation of the intimate napkin of the state of the art;

Figure 4 - a top view of a second variation of the intimate napkin object of the present invention;

Figure 5 - a first chart related to the determination of the adhesive lines of the napkin illustrated in Figures 2 and 4;

Figure 6 - a second chart related to the determination of the adhesive lines of the napkin illustrated in Figures 2 and 4;

Figure 7 - a third chart related to the determination of the adhesive lines of the napkin illustrated in Figures 2 and 4;

Figure 8 - a fourth chart related to the determination of the adhesive lines of the napkin illustrated in Figures 2 and 4;

Figure 9 - a fifth chart related to the determination of the adhesive lines of the napkin illustrated in Figures 2 and 4;

Figure 10 - a sixth chart related to the determination of the adhesive lines of the napkin illustrated in Figures 2 and 4; and

Figure 11 - a seventh chart related to the determination of the adhesive lines of the napkin illustrated in Figures 2 and 4.

Detailed description of the drawings

[0017] As can be seen in Figure 2, a first variation of the intimate napkin 1 object of the present invention comprises a substantially planar and elongated frame 3, with its two main ridges presenting a substantially rectilinear shape and substantially parallel, and with its two secondary ridges presenting a substantially circular shape, thus forming semi-circumferences and having a radius substantially equal to half of the width of said frame 3. The central point of the semi-circumferences delimited by the secondary ridges is located substantially on the plane defined by the frame 3.

[0018] A second variation of the intimate napkin 1 object of the present invention also presents a substantially planar and elongated frame 3' having secondary ridges virtually identical to those described in the preceding paragraph. However, the main ridges of the frame 3' present a substantially mid portion having a substantially trapezoidal shape substantially projecting outwards in relation to the ridges, thus forming two additional surfaces 5, also called tabs 5.

[0019] Both the frames 3, 3' comprise an absorbent core 2 which covers a substantial area of the frame 3,3', in such a manner to ease the correct absorption of the menstrual flow or menstruation. On the inner surface or top sheet of the napkin 1,1', which contacts the user's vaginal cavity, it is comprised of a pervious material layer, whereas the outer surface of same, or lining sheet, is comprised of an impervious material layer, such as a plastic film, for instance.

[0020] To this lining sheet is applied an adhesive layer formed by twelve stretches of adhesive comprising the adhesive lines 4 applied substantially parallel to one another, defining interrupted adhesive lines 4', said lines 4, 4' having a direction substantially coincident with the direction of the longitudinal length of the napkin 1,1', wherein the line 4 has a width of at least 1 millimeter and the line 4' has a width of at least 1.2 millimeters.

[0021] The napkin 1' is also comprised of two adhesive layers located in a substantially central portion of the tabs 5, each of the adhesive layers of the tabs having six adhesive stretches which comprise the adhesive lines 6 applied substantially parallel to one another, defining interrupted adhesive 6' lines, the lines 6,6' having a direction substantially coincident with the direction of the longitudinal length of the napkin 1', wherein the line 6 has a width of at least 1 millimeter and the line 6' has a width of at least 1.2 millimeter.

[0022] In order to preserve the adhering power of the napkin 1,1', before the same is utilized, a film of a substantially lightly adherent material (not shown), which can be easily removed without causing damage to the adhesive lines 4,6 is provided.

[0023] The twelve adhesive lines 4, alternated with the interrupted lines adhesive lines 4', cause the napkin 1,

1' to undergo shearing efforts without being detached therefrom, since the interrupted adhesive lines 4' function as deformable regions between the adhesive lines 4, allowing a deformation of certain regions of the napkin 1,1' without weakening same and, therefore, a decrease in the efficacy of the adhesive or even the partial and complete detachment from the panties.

[0024] The attachment adhesive utilized in the adhesive lines 4,6 can be mechanical (hook-lace type) or chemical, such as adhesives. The term adhesive means either double face adhesive ribbons, surfaces of a tacky texture, or any treatment on the lining sheet, the effect of which is to increase its adherence to a surface, layer or region. Such adhesives can be cold pressure sensitive, such as acrylate adhesives, generally combined with polyterpenes, block copolymers A-B-A or the like, such as the block copolymer styrene-butylene-styrene-styrene, for example, Stereon, or a two-block butadiene styrene AB adhesive, hot melt adhesives such as HM-6513 or HL 1972 from H. B. Fuller (St. Paul, Minnesota) or N.S. 34-5509 from National Starch (Bridgewater, New Jersey) are examples. Evidently, other adhesives different from the hot melt adhesive can also be used and shall be chosen based on several factors such as the adhesive compatibility with the other materials being used and with the final use of the absorbent product, and antioxidants and dyes can be included.

[0025] Preferably, the adhesive utilized in the adhesive lines 4,6 is of the hot-melt type, with a ratio between 10 g/m² and 22,5 g/m². The number of adhesive lines 4, in turn, can range between five and twenty-five, preferably ranging between twelve and seventeen, while the number of adhesive lines 6 in the tabs 5 is at least two, preferably ranging between five and eight lines 6.

[0026] As mentioned above, the napkin 1,1' object of the present invention can undergo shearing efforts, known as "Shear", without being detached from the user's panties. Like other additional advantages, it requires less adhesive without having a corresponding reduction in the attachment ability, is easy to apply through several lines, its manufacturing procedure is significantly easier and more reliable than in the case when a single wide adhesive line is applied, and shows an aesthetic effect that pleases the user, encouraging the purchase of the napkin 1,1'.

[0027] The values mentioned above were obtained from the study of "Shear" in terms of the standard of the adhesive application intimate napkins - Response Surface Methodology (RSM) described as follows:

"Shear" Results:

[0028] The results of the shearing efforts or "Shear" can be interpreted based on charts from 1 to 7, corresponding respectively to Figures 5 to 11, and they indicate an satisfactory adjustment of the data observed to a second grade polynomial function proposed in the central range of the studied interval of 3,0 to 3,5 as we can see in chart 1, which represents the observed value (Y) versus the value predicted by the model (Previewed Y).

[0029] By considering the parameters estimated for the 2nd grade function which fits the model, we can conclude that "Shear" is mainly a function of the adhesive ratio (G) and the number of adhesive lines (L) in smaller grade, and therefore the length of the adhesive strap formed by several adhesive lines 4,6 can be adjusted to any level recommended by the process or product conditions. We have the function below as a model:

$$Y = b_0 + b_1.G + b_2.(L)^2$$

wherein "Y" represents the value of "Shear", "L" is the number of adhesive lines and "G" is the adhesive ratio. The values of "b" are the determined coefficients and they are respectively: (-13.73); 0.66 and 0.004.

[0030] This function has also a "dominating point" as a solution. Within the studied interval it presents as solution the value of "Shear" as being 3.18 for an adhesive ratio of 23,6 g/m², for a 160 mm adhesive strap and with nineteen adhesive lines.

[0031] Charts 2 and 3 represent level curves and allow us to analyse the influence of the two variables: the ratio and the number of the adhesive lines at the same time, keeping constant the length of the adhesive strap.

[0032] In chart 2, the value of "Shear" appears in terms of the adhesive ratio and the number of adhesive lines for a 180 mm adhesive strap.

[0033] We can observe that for a given adhesive ratio the "Shear" decreases very sharply with the increase of the number of adhesive lines tending to increase when the number of adhesive lines tends to infinite, that is, it approximates again to a single strap. For a fixed number of adhesive lines, an increase in the ratio also causes an increase in the value of "Shear".

[0034] In chart 3, wherein the value of "Shear" appears in terms of the adhesive ratio and the number of adhesive lines for a 190 mm adhesive strap, it can be seen that practically no change in the behavior is observed in relation to a 180 mm adhesive strap.

[0035] The same analysis can be carried out by fixating the adhesive ratio and observing how the "Shear" varies in terms of the length of the adhesive strap and the number of the adhesive lines.

[0036] Chart 4 shows the value of "Shear" as a function of the length of the adhesive strap and the number of adhesive lines for a 10 g/m² ratio.

[0037] There, the quasi-parallelism of the curves to the Y axis indicates a practically null effect of the length of the adhesive strap on the value of "Shear" and a strong influence of the number of adhesive lines, thus, when we change from a single strap to, for instance, five adhesive lines, we will be strongly decreasing the "Shear" to any length of adhesive strap, whereas by maintaining a certain number of adhesive lines the "Shear" only will increase with an considerable increase in the length of the adhesive strap. This behavior is even more accentuated for

greater ratios, as can be seen in chart 5, which shows the value of "Shear" as function of the length of the adhesive strap and the number of adhesive lines for a 20 g/m² ratio.

[0038] Finally, by maintaining constant the number of adhesive lines, we can analyse how the "Shear" varies in terms of the ratio and length of the adhesive strap, according to charts 6 and 7. Chart 6 shows the value of "Shear" as function of the length of the adhesive strap and the ratio of adhesive for a number of adhesive lines wherein L = 20. We observe from chart 6 that there is a directly proportional relationship between the adhesive ratio and the value of "Shear" in a certain interval, that is, it would be useless to increase indefinitely the adhesive ratio because this increase is not followed by the same response to "Shear".

[0039] The same is applicable to a single adhesive strap, according to chart 7, which presents the value of "Shear" as a function of the length of the adhesive strap and the adhesive ratio for a single adhesive strap (L = 0).

[0040] If we establish a 180 mm length, which is the specification of the product, we would have:

- Value of "Shear" given as solution by RSM: 3.18 kgf
- Adhesive ratio: which can range from 10 to 22.5 g/m²
- Number of adhesive lines: which can range from 5 to 25

[0041] After having described an example of a preferred realization, it must be understood that the scope of the present invention encompasses other possible variations, such as the application, to the lining sheet of the napkin 1,1', of an adhesive element formed by adhesive stretches in which might comprise continuous or discontinuous adhesive lines 4,6 applied substantially transverse, perpendicular and/or inclined to one another can present directions substantially transversal, perpendicular and/or inclined to the longitudinal length of the frame 3,3', thus characterizing different standards such as lozenges, trapezes, squares or any other standard known by those skilled in the art.

Claims

1. An intimate napkin, comprising a substantially planar and elongated frame (3, 3') having an outer impervious material layer, an absorbing core (2) inserted in the frame (3,3') and an adhesive layer applied to the impervious material layer, the napkin (1,1'), **characterized in that** the adhesive layer is comprised of at least five stretches of adhesive (4) substantially spaced apart.
2. The napkin as claimed in claim 1, **characterized in that** the stretches of adhesive comprise adhesive lines (4) substantially parallel to one another, arranged substantially longitudinally in the frame (3,3').
3. The napkin, as claimed in claim 1 or claim 2, **characterized in that** it comprises from five to twenty-five adhesive lines (4).
4. The napkin, as claimed in claim 4, **characterized in that** it comprises twelve adhesive lines (4).
5. The napkin, as claimed in any one of claims 1 to 4, **characterized in that** the stretches of adhesive comprise the adhesive lines (4) substantially transverse, perpendicular and or inclined to one another, which are arranged in substantially transverse, perpendicular and or inclined directions to the longitudinal length of the frame (3,3').
6. The napkin, as claimed in any one of claims 1 to 5, **characterized in that** it further comprises two tabs (5) projecting substantially outwardly from the two main ridges of the frame (3').
7. The napkin, as claimed in claim 6, **characterized in that** each of the tabs (5) has at least two adhesive stretches of tab (6) substantially spaced apart.
8. The napkin, as claimed in claim 7, **characterized in that** the adhesive stretches of the tab comprise adhesive lines of tab (6) substantially parallel to one another which are arranged substantially longitudinally in the tabs (5).
9. The napkin, as claimed in any one of claims 6 to 8, **characterized in that** the adhesive stretches of the tab comprise adhesive lines of tab (6) substantially transverse, perpendicular and or inclined to one another, arranged in substantially transverse, perpendicular and or inclined directions to the substantially longitudinal length of the tabs (5).
10. The napkin, as claimed in any one of claims 1 or 9, **characterized in that** the adhesive lines are millimeter wide and the spacing between the lines is 1 2 millimeter.

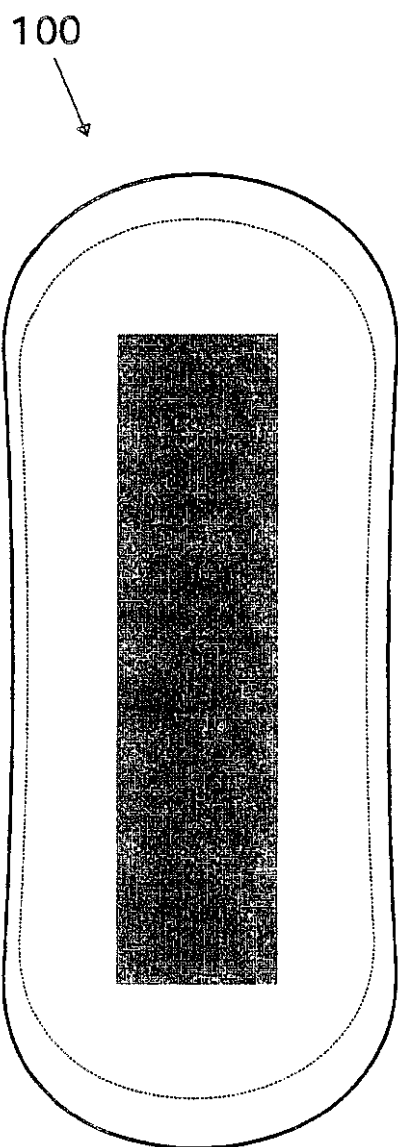


Fig. 1

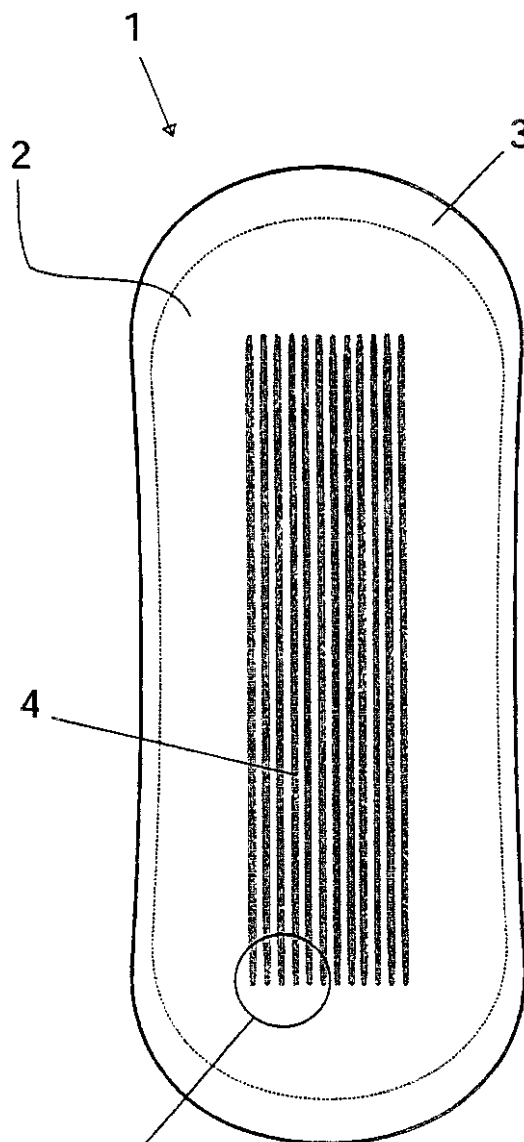
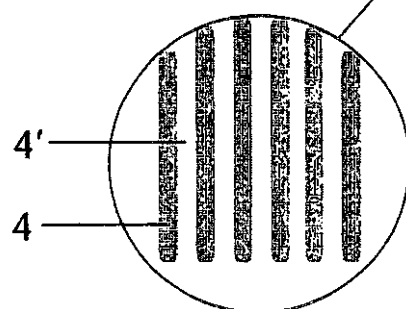


Fig. 2



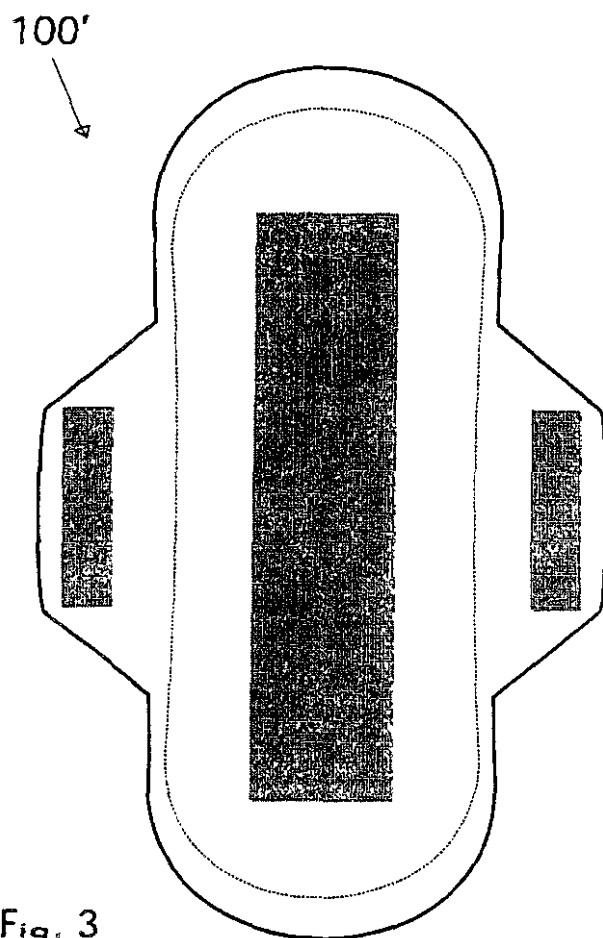


Fig. 3

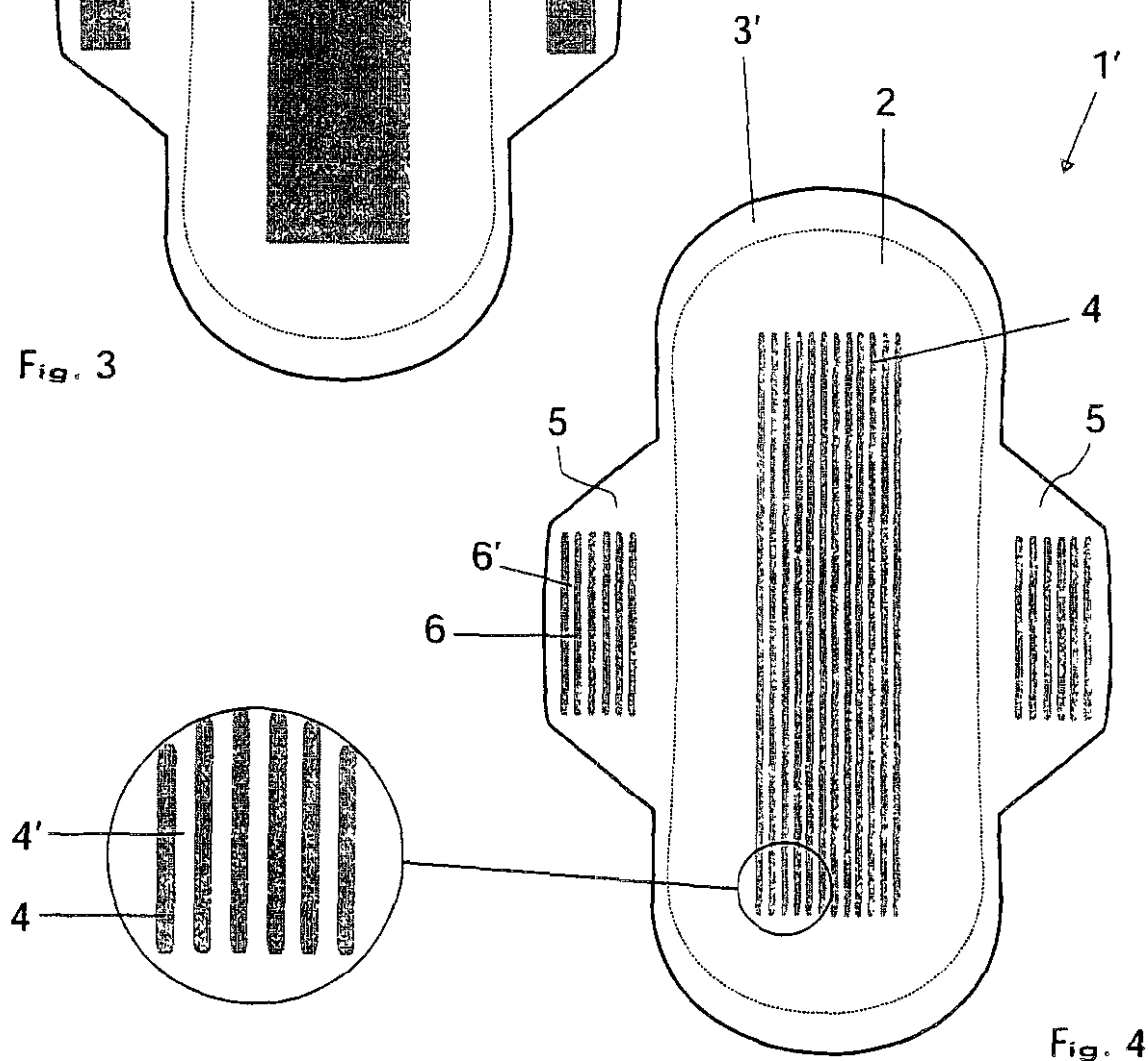


Fig. 4

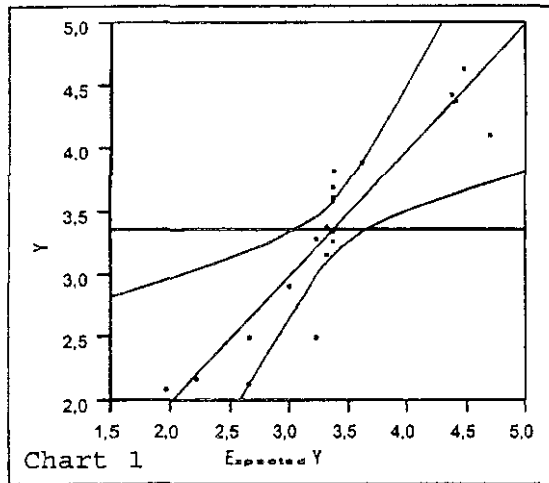


Fig. 5

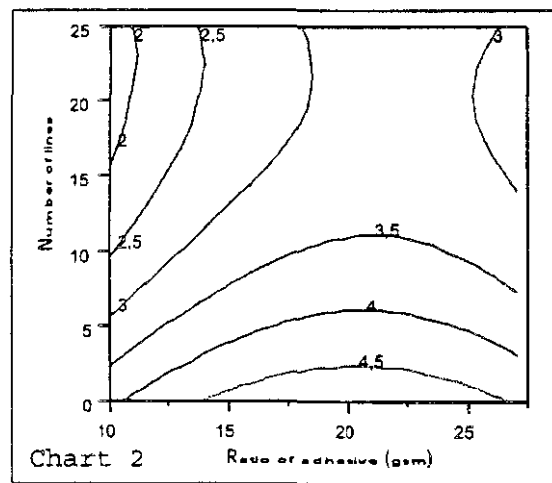


Fig. 6

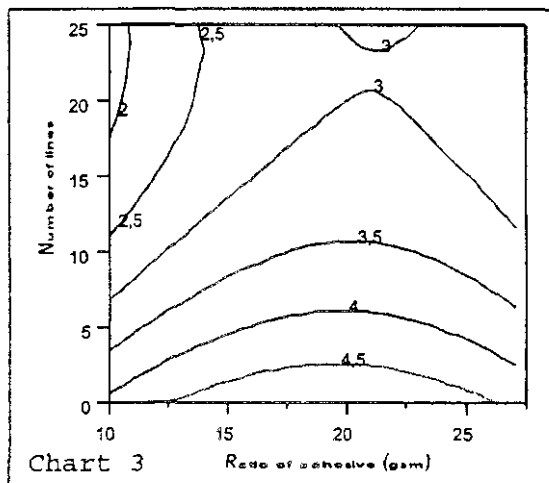


Fig. 7

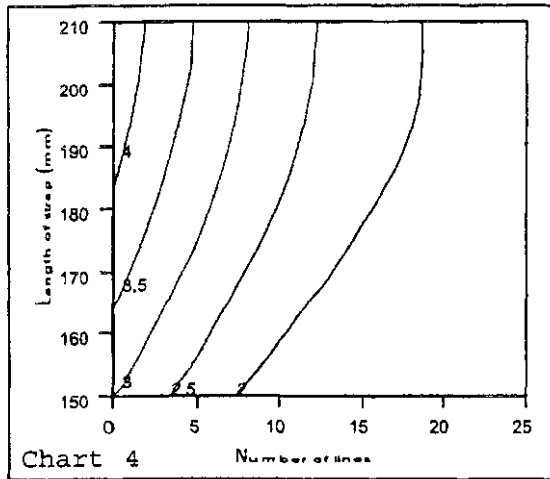


Fig. 8

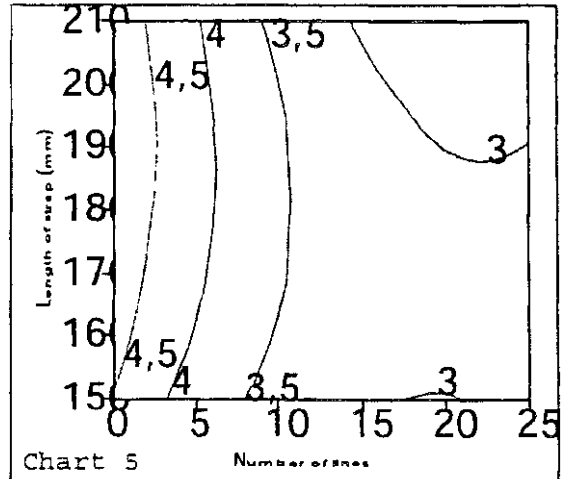


Fig. 9

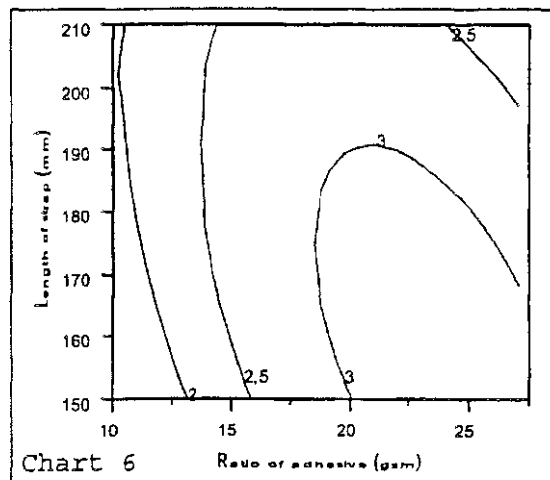


Fig. 10

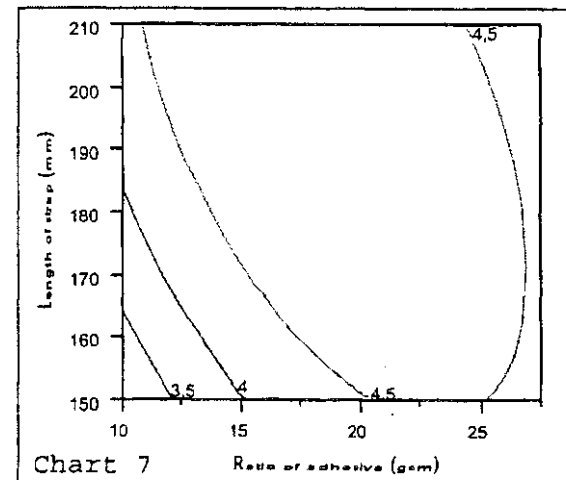


Fig. 11



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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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Place of search		Date of completion of the search	Examiner
MUNICH		19 December 2001	Westermayer, W
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HKP0220765

贴身护垫

本发明公开了一种贴身护垫，其包括一个基本上平坦及伸长的结构（3，3'），该结构具有一个密封材料外层，一个嵌入该结构（3，3'）内的吸收芯（2），和一个应用在密封材料层上的粘性层。该粘性层包括至少五段基本上分隔开的粘性条（4）。