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(54) Title: INCONTINENCE ARTICLE IN THE FORM OF BRIEFS

(54) Bezeichnung : INKONTINENZARTIKEL IN HÖSCHENFORM

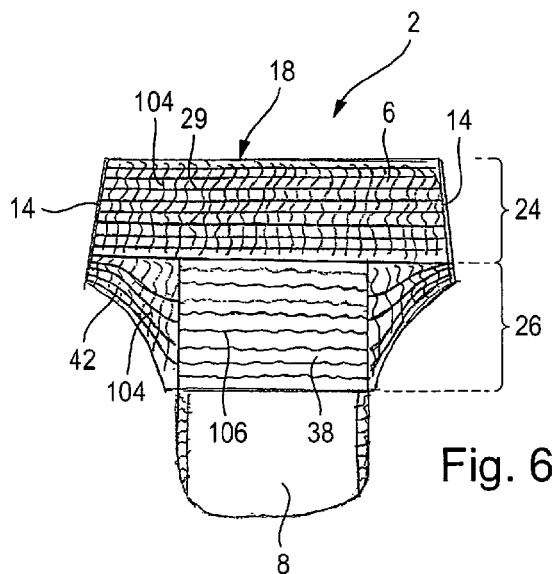


Fig. 6

(57) Abstract: The invention relates to an incontinence article (2) in the form of briefs, comprising a front abdomen section (4) and a rear back section (6), which are formed by separate, spaced components; an abdomen and back band having a hip opening (18) closed in the hip circumferential direction, wherein the components are connected to each other at the side seam areas (14) by the manufacturer; a crotch section (8) having an absorbing body (7), between the abdomen section (4) and the back section (6); wherein first elasticating means (28, 29) extend parallel to each other in the hip circumferential direction (16) in the abdomen section (4) and the back section (6); in the area (22, 26) of the abdomen section (4) and the back section (6) facing leg openings (19), second elasticating means (40, 42), which extend from the two side seam areas (14) in an arcuate manner, spreading with increasing distance from each other; wherein the first elasticating means (28, 29) have a distance from each other that is at least 20% greater than the distance of the second elasticating means (40, 42) in the side seam area (14), have an at least 20% greater thread thickness than the second elasticating means (40, 42), and are fastened with an at least 10% greater pre-load in the abdomen section (4) and in the back section (6) than the second elasticating means (40, 42).

(57) Zusammenfassung:

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Die Erfindung betrifft einen Inkontinenzartikel (2) in Höschenform mit einem vorderen Bauchabschnitt (4) und einem hinteren Rückenabschnitt (6), die von separaten und beabstandeten Komponenten gebildet sind; einen Bauch- und Rückenband, in Hüftumfangsrichtung geschlossenen Hüftöffnung (18), die Seitennahtbereichen (14) herstellerseitig verbunden; einen Schrittabchnitt (8) mit Absorptionskörper (7), zwischen Bauchabschnitt (4) und Rückenabschnitt (6); wobei erste Elastifizierungsmittel (28, 29) in dem Bauchabschnitt (4) und dem Rückenabschnitt (6) sich parallel zueinander in Hüftumfangsrichtung (16) erstrecken; in den Beinöffnungen (19) zugewandten Bereich (22, 26) des Bauchabschnitts (4) und des Rückenabschnitts (6) zweite Elastifizierungsmittel (40, 42), die ausgehen von den beiden Seitennahtbereichen (14) bogenförmig sich auffächernd mit zunehmendem Abstand voneinander verlaufen; wobei die ersten Elastifizierungsmittel (28, 29) einen wenigstens 20 % größeren Abstand voneinander haben als der Abstand der zweiten Elastifizierungsmittel (40, 42) im Seitennahtbereich (14), und eine um wenigstens 20 % grössere Fadenstärke haben als die zweiten Elastifizierungsmittel (40, 42) und mit einer um wenigstens 10 % größeren Vorspannung im Bauchabschnitt (4) und im Rückenabschnitt (6) fixiert sind als die zweiten Elastifizierungsmittel (40, 42).

**Title: incontinence article in pants form**

**Description**

5 The invention relates to an incontinence article in pants form for absorbing bodily excretions with a front stomach section and a rear back section which are formed by separate components which are spaced apart from one another in a longitudinal direction along a longitudinal center axis however, which are connected to one another by the manufacturer at lateral seam regions on both sides for forming a stomach- and back band which is continuous in transverse direction or in 10 circumferential direction of the waist and has a waist opening which is closed in circumferential direction of the waist, wherein a respective lateral seam which extends in a longitudinal direction is formed, and with a crotch section which has an absorption body, which extends in the longitudinal direction between stomach section and back section and with its side that faces away from the body is non-detachably 15 attached to the back section in a respective overlapping region, wherein the stomach section, the back section and the crotch section together delimited leg openings of the incontinence article, wherein in the stomach section and back section first elastifying means are provided which extend spaced apart from one another and 20 parallel to one another in transverse direction or a circumferential direction of the waist and in this way provide planar elasticity of the stomach section and the back section, wherein second elastifying means are provided in a crotch-side region of the stomach section and of the back section which crotch-side regions face away from the leg openings, and which, starting from the two lateral seam regions fan out with 25 increasing distance to one another arch-like in the direction towards a longitudinal center axis of the incontinence article and as far as into the overlapping region of crotch section and stomach section (in the following also referred to as front overlapping section) or respectively of crotch section and back section (in the following also refers to as back overlapping region), where they may no longer have 30 their elastifying effect and can in particular be cut.

Thus, a three-component incontinence article is involved, wherein the stomach section, the back section and the crotch section form these three components. The stomach section and the back section as well as the crotch section are fed into or transported in a manufacturing device as separate components. Typically, the components are guided in a respective transport plane in a flat or evenly spread out state. The stomach section and the back section are transported in the later transverse direction of the incontinence article; they are transported spaced apart in the later longitudinal direction of the incontinence article. Thus, the later transverse or waist-circumferential direction of the incontinence article extends in the machine direction of the manufacturing device. The aforementioned distance between the stomach section and the back section is then bridged by applying the crotch section as third component, wherein an overlapping region between crotch section and stomach section and between crotch section and back section is formed, wherein the three components are permanently joined with each other in the respective overlapping region. Finally, the stomach section and the back section are interconnected at lateral seam regions on both sides as mentioned above. Such an incontinence article is for example known from DE 10 2007 055 628 A1.

Incontinence articles in pants form principally differ from openable and closable incontinence articles in conventional diaper form, in that the waist circumference is already predetermined by the pant form, and the adjustment to different body sizes based on a number of basic sizes is achieved in that the article can be elastically stretched. For this, elastifying means, in particular the form of bands or threads, often also referred to as Lycra – bands are usually connected in pre-tensioned state (Stretch-Bond method) to chassis materials of the incontinence article i.e., they are fixed in a pre-tensioned state on the chassis materials for example by means of glue. Due to their pre-tension, these elastifying means bundle chassis materials together, thereby forming plications, which typically extend transverse to the direction in which the elastifying means are pre-tensioned, i.e. in this case in longitudinal direction of the article. The incontinence article or the elastified chassis materials of the

5 incontinence article can then be elastically stretched again when the user puts on the incontinence article like a pant. The chassis materials themselves on the other hand are preferably nonelastic and can thus be guided in a well defined manner in the transport plane in a flat or evenly spread out state so that the elastifying means can then be attached with a defined pretension.

10 In known incontinence articles of the type discussed here there is a tendency to configure the stomach section and the back section and with this the stomach or back band which is formed by them and is continuous in waist-circumferential direction relatively expansive, so that the waist or waist border comes to lie relatively high on the user. This has the purpose to create a relatively great body contacting surface of the stomach- and back band which is two-dimensionally elastified over its extent, through which surface alone the fit of the incontinence article on the body of the user is determined and maintained. The greater the body-contacting and  
15 elastified surface of the stomach section and back section, the greater are the forces which hold the incontinence article on the body. After all, it has to be insured that the incontinence article does not slide down when used in the usual intended manner.

20 At the starting point of the present invention it was recognized, that a broad stomach and back band, i.e., a high positioned waist border or waist especially in the case of mobile users and in a very pronounced manner in users with a paunch, is associated with the problem that the waist border region of the incontinence article folds outwardly. In this case, folding over or rolling over by several centimeters can occur in longitudinal direction, which is then associated with a significant reduction of the  
25 body contacting surface, whereupon the secure fit of the incontinence article is no longer ensured. In addition, this leads to a strong local increase of pinching forces acting in circumferential direction, because multiple elastifying means come to lie in a manner of speaking on one waist circumferential line.

This leads to an unpleasant wearing experience possibly involving severe skin irritations, but not to an improved fit of the hygiene article.

5 Significantly reducing the width or longitudinal extent of the stomach and back band does also not lead to a satisfactory wearing situation, even though the problem of the outwardly folding of the waist border can be reduced. However, pinching forces still occur and the elastification of the stomach and back band cannot be solved in a satisfactory manner.

10 Proceeding from these already inventively gained knowledge, it would be advantageous if the present invention would further improve the fit, and with this the wearing comfort of the here disclosed incontinence article in an economically acceptable manner, wherein the afore described problems are effectively addressed.

15 The present invention provides Incontinence article in pant form for absorbing bodily excretions, with a front stomach section and a rear back section, which are formed by separate components that are spaced apart in a longitudinal direction along a longitudinal center axis, however, which are connected at lateral seam regions at both sides by the manufacturer for forming a stomach or back band which is  
20 continuous in transverse or waist circumferential direction and has a waist opening which is closed in waist circumferential direction, wherein one respective lateral seam is formed which extends in longitudinal direction, and with a crotch section which has an absorption body and extends in the longitudinal direction between stomach section and back section and is non detachably attached with its body averted side  
25 on the stomach section and the back section in a respective overlapping region, wherein the stomach section, the back section and the crotch section together delimit leg openings of the incontinence article, wherein in the stomach section and the back section first elastifying means are provided, which extend spaced apart an in parallel relationship to one another in transverse or waist circumferential direction and in this  
30 way two-dimensionally elastify the back section, wherein in a region of the stomach

5 section which is crotch side and faces the leg openings, second elastifying means are provided which starting from the two later seam regions fan out arch like in the direction toward the longitudinal center axis of the incontinence article with increasing distance to one another and extend as far as into the overlapping region of the crotch section and back section or of the crotch section and stomach section, wherein there, they may no longer posses their elastifying effect, and can in particular be cut, wherein the extent of the respective lateral seam in longitudinal direction is 100 – 170 mm and that the ration between the extent of the respective lateral seam in longitudinal direction and the extent of the incontinence article between waist border and a transverse center axis is at most 0.42, and in that in the stomach section (4) and in the back section the ration between the distance of the outermost waist facing first elastifying means in longitudinal direction to the innermost waist facing first elastifying means and the extent of the incontinence article between waist border and the transverse center axis is at most 0.3, and in that the first elastifying means have a distance to one another which is at least 20% greater than distance between the second elastifying means to one another defined in the later seam region, and in that the first elastifying means have a thread strength which is greater by at least 20% than a thread strength of the second elastifying means and are fixed in the stomach section and in the back section with a pre-tension which is greater by at least 10% than a pre-tension of the second elastifying means.

25 According to embodiments of the invention, it is thus proposed to configure the stomach- and back band which is continuous in transverse or waist-circumferential direction and is formed by the stomach section and the back section narrower, so that the waist border comes to lie lower at the user in longitudinal direction of the body of the standing user. In order to compensate for the thereby reduced planar extension of the stomach section and the back section, the number of elastifying means is not increased but in the contrary, the distance of the first elastifying means to each other is selected greater than in the second elastifying means. In this way, 30 the number of the first elastifying means is significantly reduced, which at the same

time improves the economic efficiency of the hygiene article. According to the embodiments of the invention, it was also recognized, that this reduction of the planar extent and the reduction of the number of the elastifying means through increase of the distance of the first elastifying means to each other does not lead to disadvantages, as long as the return force of a respective first elastifying means is increased, by using a greater thread strength and a stronger retention for the first elastifying means when introducing and fixing the first elastifying means. Preferably, a greater thread strength as well as a greater pretension is used. The pretension is defined as the degree of stretching of the stretched elastifying means relative to the non-stretched/relaxed original state of the elastifying means in the state of applying and fixing the elastifying means in the manufacturing machine. The degree of stretching is thus calculated as the ratio of the stretched length  $L'$  (=starting length  $L + \Delta L$ ) to the starting length  $L$ , i.e.,  $L'/L$ .

The thread strength of the elastifying means is expressed in the unit dtex (1 dtex = 1g/10000 m). The thread strength is determined according to the testing provisions BISFA, the International Bureau for the Standardization of man-made Fibres, Test methods for bare elastane yarns, edition 1998, chapter 5: "Determination of linear density". The thread strength or linear density is determined by determining the mass of a test specimen having a known thread length of 1,000 mm (cut under a standard pre-tension of 0.1+/- 0.01 mN/tex) after a conditioning under standard conditions (23°C +/- 2°C, 50% +/- 5% relative humidity) in the relaxed state.

The thread strength (in dtex) is calculated from the quotient of the mass (in g) divided by the length of the section (in m) multiplied by the factor 10,000.

For this, five sections of the thread-shaped or band-shaped elastifying means having a length of 1,300 mm are cut off from the role or package under a tension which is as small as possible, namely in uneven distances of at least 2 m. These five sections are relaxed tension-less and are let rest under standard conditions for at least four hours. Then, a test specimen of thousand millimeters +/- 1 mm is cut off from the

respective 1,300 mm long section, while the section is maintained under a pretension of 0.1 mN/tex. The cut off test specimens of 1,000 mm length are weighed to an accuracy of +/- 1% of their expected mass. For each testing specimen its thread strength is obtained by multiplying the respective mass with the factor 10,000 in dtex.

5 From the five testing specimen, the arithmetic mean value is calculated which is used as thread strength for the purposes discussed here.

10 For determining the extent L1 of the incontinence article between waist border and the transverse center axis, the transverse center axis is defined so that the longitudinal extent of the incontinence article in the stretched out, flattened out state is divided into two identical partial sections during guidance in the flat-material tracks in the manufacturing machine (Figure 7). The total length of the diaper is thus 2 x L1. All remaining dimensions mentioned here also refer to the flat, stretched out state of the flat materials shown in Figure 1.

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In typical sizes, the longitudinal extent L1 of the incontinence article discussed here is 320 to 450 mm, in particular 330 to 440 mm and further in particular 340 to 430 mm.

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As mentioned, the first elastifying means substantially extend in transverse – or waist-circumferential direction. The second elastifying means extend – as mentioned – also starting from a respective lateral seam region in the direction towards the longitudinal middle axis; in the course of this they fan out and extend more or less arch-like, wherein the arch-shape initially curves in the direction towards the transverse center axis, as can be well seen from Figure 1. The distance of the second elastifying means to each other in a respective lateral seam region is a boat 3 to 8 mm. Further inwardly, in the direction towards the longitudinal center axis and in particular in the region of a border of an absorption body, the distance of the second elastifying means to each other is between about 7 and 35 mm, in particular between 12 and 30 mm.

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Advantageously, the second elastifying means extent in the overlapping region at least in the region of the longitudinal center axis in transverse direction and preferably also parallel to one another/.

- 5 This fanning out of the second elastifying means can also be quantitatively described in more detail. For example, the second elastifying means of the back section shown in Figure 1 have a minimum distance of 3 to 8 mm to each other (distance between immediately neighboring elastifying means) and at a border of an absorption body or a longitudinal border of the crotch section have a maximum distance to one another (distance between immediately neighboring elastifying means) of 7 to 35 mm. A fanning-out degree F can be defined as follows:

$$F = (A-B)/B * 100\%.$$

- 15 This fanning-out degree advantageously is between 50 and 900%, in particular between 100 and 700%, and further in particular between 150 to 550%. Advantageously, it is greater in the back section than in the stomach section. The variables A and B are defined as the distance of the in longitudinal direction outermost second elastifying means to the in longitudinal direction innermost second elastifying means (i.e., not the distance between immediately neighboring elastifying means), i.e. A as the maximum distance, in particular at the longitudinal border of the crotch section, and B as the minimum distance, in particular in the lateral seam region.

- 25 It is further advantageous when the ratio (L2/L1) between the extent (L2) of the respective lateral seam in the longitudinal direction and the extent (L1) of the incontinence article between waist border and a transfers center axis is at most 0.4, in particular at most 0.39, in particular at most 0.38 and further in particular at least 0.20, further in particular at least 0.25, further in particular at least 0.30. According to  
30 embodiments of the invention, it was discovered that within these range limits a well

functioning configuration of the incontinence article with regard to the here discussed aspects can be created. – It is further advantageous, when in the stomach section and the back section the ratio ( $L4/L1$ ) between the distance ( $L4$ ) of the outermost waist-facing first elastifying means in longitudinal direction to the innermost crotch facing first elastifying means and the extent ( $L1$ ) of the incontinence article between waist border and the transverse center axis is at most 0.29, and in particular at the 0.12, in particular at least 0.15, in particular at least 0.18.

An advantageous absolute value for the distance  $L4$  of the outermost waist facing first elastifying means in longitudinal direction to the innermost crotch-facing first elastifying means is at most 120 mm, in particular at most 110 mm, in particular at most 100 mm, in particular at most 90 mm and in particular at least 60 mm, in particular at least 70 mm, in particular 70 – 110 mm, in particular 70 - 100 mm, in particular 70 – 100 mm, in particular 70 – 90 mm.

Due to the leg openings, the stomach section and the back section do not have their maximum extent in the lateral seam region, but rather towards the center of the incontinence article where the crotch section is provided. It is advantageous, when the maximum extent ( $L3B$ ) of the stomach section in the longitudinal direction is 135 – 260 mm, in particular 125 – 250 mm and/or the maximum extent ( $L3R$ ) of the back section in the longitudinal direction is 200 – 320 mm, in particular 210 – 310 mm.

It was noted at the beginning, that the three-component concept of the hygiene article composed of stomach section, back section and a crotch section connecting the stomach section and the back section implies, that the tracks which form the stomach section and the back section are spaced apart from one another in the longitudinal direction. In this regard, it is advantageous when a minimum distance between the stomach section and the back section in longitudinal direction is 250 – 400 mm, in particular 270 – 400 mm, further in particular 300 – 390 mm.

5 It is further proposed that the ratio ( $L2/Q$ ) between the extent ( $L2$ ) of the respective lateral seam in longitudinal direction and the extent ( $Q$ ) of the stomach section or the back section in transverse direction is at most 0.22, in particular at most 0.20, in particular at least 0.10, in particular at least 0.14.

10 In a similar manner, the value  $L4$  can relate to the transverse extent of the stomach section or the back section. It is advantageous in this context when in the stomach section and the back section the ratio ( $L4/Q$ ) between the distance ( $L4$ ) of the outermost waist facing first elastifying means in the longitudinal direction to the innermost crotch facing first elastifying means and the extent ( $Q$ ) of the stomach section or the back section in transverse direction is at most 0.15, in particular at most 0.14, in particular at most 0.13 and in particular at least 0.05 and further in particular at least 0.08 and further in particular at least 0.10.

15 It is in particular advantageous especially with regard to an economical manufacturability of the incontinence article, when the number of elastifying means can be reduced. It is thus proposed that in the stomach section and/or in the back section, the ratio ( $d1/L4$ ) between the distance ( $d1$ ) of the first elastifying means in the longitudinal direction to one another and the distance ( $L4$ ) of the outermost waist  
20 facing first elastifying means in longitudinal direction to the innermost crotch facing first elastifying means is between 0.08 and 0.25, in particular between 0.09 and 0.20, in particular between 0.10 and 0.18. In absolute values the distance ( $d1$ ) of the first elastifying means in longitudinal direction to one another is at least 8 mm, in particular at least 10 mm, in particular 10 – 15 mm, in particular 11 – 14 mm, color in  
25 particular 12 – 13 mm. preferably, the first elastifying means have the same distance to one another.

30 In contrast, a minimum distance of the second elastifying means to each other in their point of origin in the lateral seam regions is 3 to 8 mm, in particular 3 to 7 mm, in particular 3 to 6 mm.

5 It is further advantageous, when the first elastifying means have a distance to one another which is at least 30%, in particular at least 50%, in particular at most 200%, in particular at most 180%, in particular at most 150%, greater than the distance of the second elastifying means to each other in the lateral seam region.

10 As first and/or second elastifying means preferably thread-shaped or band-shaped elastifying means are used such as rubber threads, polyetherpolyurethane threads or polyesterolyurethane threads, preferably elastic threads such as Lycra- or Spandex.

15 In a refinement of an embodiment of the invention, the first elastifying means have a thread strength which is at least 30%, in particular at least 50%, in particular at most 150%, in particular at most 130%, in particular at most 100% greater than the second elastifying means.

20 It is further advantageous when the thread strength of the first elastifying means is at least 1000 dtex, in particular at least 1100 dtex, in particular at least 1200 dtex, in particular 1200 – 1500 dtex, in particular 1200 – 1400 dtex.

25 In a further refinement of an embodiment of the present invention it is proposed, that the thread strength of the second elastifying means is 500 – 1100 dtex, in particular 600 – thousand dtex, in particular 700 – 900 dtex.

30 In a further refinement of an embodiment of the present invention the first elastifying means are fixed with a pre-tension which is greater by at least 20%, in particular at least 30%, in particular at most 100%, in particular at most 80%, in particular at most 60%, than the second elastifying means.

35 The first elastifying means are fixed relative to the chassis materials with a pre-tension of 3 – 8, in particular 3 – 7, in particular 4 – 7 and further in particular 4 – 6.

The second elastifying means on the other hand are fixed with a smaller pre-tension relative thereto of 2 – 5, in particular 2.5 – 4.5, in particular 2.5 – 4, and further in particular 3 – 4.

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The composite of elastifying means and chassis materials of the incontinence article according to the invention is preferably formed as follows: that the second elastifying means are arranged and fixed between a chassis material layer, preferably made of a nonwoven, which forms the body-averted visible side of the stomach section or the back section, and a chassis material layer positioned inwardly relative to the other chassis material layer and made preferably of a nonwoven, wherein the inwardly located chassis material layer essentially does not extend over the associated overlapping region of the crotch section and the stomach section or crotch section and back section in a longitudinal direction of the incontinence article. This is the case when the overlap is at most several mm, in particular at most 8 mm, preferably at most 5 mm.

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According to a further embodiment of the present invention it is proposed that the second elastifying means are fixed in a glue bed between chassis material layers and/or the first elastifying means are fixed between chassis material layers by applying adhesive to individual strands. Applying adhesive to the individual strands in the region of the first elastifying means allows avoiding a stiffening of the upper transversely elastified waist-side region of the stomach – and back section. In addition, in this context it is especially important and advantageous, that the chassis material layers which abut one another, are in this case not fixed to one another over a continuous surface. They can thus detach from one another outside of the first elastifying means to which adhesive has been applied individually. In conjunction with the first elastifying means, a particularly esthetically pleasing and in addition very soft and flexible frill formation results. In conjunction with the greater distance of the first elastifying means to one another and a higher return force of a respective first

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5 elastifying means, which can be achieved by greater thread strengths and/or greater pre-tension, a pleating of the chassis materials in the region of the first elastifying means which is higher or greater in thickness direction can be achieved. This also results in a good fit. However, it also leads to a better grip or grippability of the stomach – and waistband, which has been reduced in height.

10 Due to the fact that the second elastifying means are preferably fixed in a continuous glue bed between chassis material layers, a laminate results in which the layers are interconnected over their entire surfaces. This facilitates the joining of the chassis materials with further components, because no undefined pleatings are formed by materials, which are not fixed to each other. The fixing of the second elastifying means in a glue bed is thus advantageous especially with regard to the joining of the crotch section with the stomach section or the back section. The front and rear overlapping region of crotch section and stomach section or back section is located in  
15 the region in which the second elastifying means are guided.

20 It is further advantageous, when the first elastifying means in the stomach section and in the back section are fixed between a body-averted chassis material layer and a body-facing chassis material layer by individually applying adhesive to the strands, and the body-facing chassis material layer protrudes over or overlaps the associated longitudinal end of the crotch section on the body-facing side of the crotch section. In this way, a material transition between the longitudinal end of the crotch section and the stomach section or back section which is unpleasant for the user can be avoided or covered, so that skin irritations can be avoided.

25  
30 It is further advantageous, when the first elastifying means in the stomach section and in the back section are fixed between a body averted chassis material layer and a body facing chassis material layer by applying adhesive to individual strands, wherein on the waist border none of the chassis material layers is folded about the other one, and the body-facing chassis material layer and the body-averted chassis

material layer are not fixed to each other along the waist opening on the waist border, so that they form a respective free ending waist-side border section. This free-ending waist side border section then corresponds in a manner of speaking to the distance between the outermost waist-facing first elastifying means and the geometric border.

5 This border section measures in longitudinal direction preferably at least 4 mm, in particular at least 5 mm, in particular at most 15 mm, in particular at most 12 mm and further in particular at most 10 mm. This increases the softness of the waist border, which extends in circumferential direction, which is perceived as pleasant by the user.

10 The chassis-forming materials of the stomach section and/or back section preferably include nonwoven materials such as spunbonds, card webs or through air bonded card webs. Particularly preferably, the chassis forming material of stomach section and/or back section includes a spunbond material. The nonwoven materials that are used for the stomach section and/or back section Preferably have a mass per area of 15 15 10 – 30 g/m<sup>2</sup>, further preferably of 15 – 25 g/m<sup>2</sup>. Particularly preferably the stomach section and the back section include a spunbond, in particular made of polypropylene, in particular with a mass per area of 15 – 25 g/m<sup>2</sup>. Low masses per area of the chassis forming materials of stomach section and/or back section, in 20 particular in form including or being made of nonwoven materials enable due to their flexibility especially advantageously the formation of skin friendly structures.

25 The crotch section advantageously includes a liquid-impermeable back sheet material and a nonwoven topsheet-material. The backsheet-material includes in particular a film, in particular having a mass per area of 8 – 20 g/m<sup>2</sup>, in particular of 8 – 16 g/m<sup>2</sup>, in particular of eight – 14 g/m<sup>2</sup>. In particular, the backsheet includes a foil, which is in particular micro-porous and liquid tight during use but at the same time breathable and permeable for water vapor.

5 The absorption body includes materials, which absorb bodily fluids such as natural and synthetic fibers, in particular cellulose fibers, preferably in the form of cellulose fluff. Preferably, the absorption body further includes superabsorbent materials (SAP), in particular on the basis of surface cross-linked, partially neutralized polyacrylates.

10 It is further advantageous, when the surface of the overlapping region of crotch section and stomach section in relation to the surface of the stomach section is at least 20%, in particular 20 – 35%, in particular 20 – 30% and/or when the surface of the overlapping region of crotch section and back section in relation to the surface of the back section is at least 25%, in particular 25 – 45%, in particular 25 – 40%, in particular 27 – 40%.

15 The portion of the surface of the crotch section of the protected total surface of the stretched out incontinence article preferably is 30 to 60%, in particular 30 to 50%.

20 Further features, details and advantages of the invention will become apparent from the included patent claims and from the drawing and the following description of a preferred embodiment of the incontinence article according to the invention. In the drawing it is shown in:

25 Figure 1 a top view onto an incontinence article according to an embodiment of the invention, wherein a stomach section, a back section and a crotch section of the incontinence article are not yet joined for forming a pant form but are shown in a spread out and evenly stretched out state;

30 Figure 2 a, b schematic sectional views of the crotch section in the region of the transverse centerline or in the overlapping region of crotch section and back section;

- Figure 3 a representation corresponding to Figure 1, illustrating the fixing of the crotch section with the stomach section and the back section by means of adhesive strips;
- 5 Figure 4 an enlarged representation of a section in the region of the overlapping region of crotch section and stomach section or crotch-section and back section of the incontinence article according to Figure 3;
- 10 Figure 5 a schematic sectional view of the relevant individual components of the chassis materials along the longitudinal center axis of the incontinence article;
- Figure 6 a schematic view of the incontinence article in its final configuration.
- 15 Figure 7 a representation corresponding to Figure 1, illustrating dimensions;
- Figure 8 a representation corresponding to Figure 1, illustrating the construction of the absorption body and the folding axes;
- 20 Figure 9 a schematic longitudinal sectional view of the absorption body taken along the longitudinal center axis;
- Figure 10 a,b,c three schematic views of the incontinence article, illustrating the folding; and
- 25 Figure 11 a schematic view of the folded incontinence article, illustrating sampling during determination of the thickness.

30 The Figures show an incontinence article in pant form, overall designated with the reference sign 2, for absorbing solid and liquid bodily excretions. The incontinence

article 2 is composed of three components which can essentially be manufactured independently i.e., a front stomach section 4, a rear back section 6, and a crotch section 8 which has an absorption body 7 and is located between the stomach section 4 and the back section 6, wherein the crotch section 8 extends in a longitudinal direction 9 of the incontinence article 2 and overlaps with a substantial surface portion of the stomach section 4 on one hand, and of the back section 6 on the other hand, and is non-detachably connected by the manufacturer in the overlapping region in a manner to be described in more detail below. As can be seen from Figure 1, this leads to an H-shaped basic structure of the incontinence article. For forming the pant form, the interconnected components shown in Figure 1 are then connected to one another at respective lateral longitudinal border sections 10, 12 of the stomach section 4 and the back section 6, also by the manufacturer, by conventional joining methods, thereby forming lateral seam regions 14 on both sides. In this pant form of the incontinence article, which is manufactured by the manufacturer, the stomach section 4 and the back section 6 extend in a transverse – or waist-circumferential direction 16 continuously and thus define with their waist border 17 a waist opening 18 which is closed in waist-circumferential direction; further, together with the crotch section 8 they delimit leg openings 19, through which the user can put on the incontinence article like a pant.

The stomach section 4 can be divided into a waist-side region 20 and into a crotch-side region 22, which faces the leg openings 19. The back section 6 can be divided correspondingly i.e., also in a waist-side region 24 and a crotch-side region, which faces the leg openings 19.

In the waist-side region 20 of the stomach section 4 and in the waist-side region 24 of the back section 6, first elastifying means 28, 29 are provided, which may be Lycra – threads, and which are connected with the flat materials (chassis materials) of the stomach section 4 and the back section 6 in the so-called stretch-bond-method.

These first elastifying means 28, 29 extended in transverse – or waist-circumferential direction 16 from one lateral seam region 14 to the other.

5 The respective crotch-side sections 22 and 26 of the stomach section 4 or of the back section 6 which face the leg openings 19 each have a border contour 32 or 34 which deviates from the transverse – or waist-circumferential direction 16 and which extends towards a transverse center axis 30 of the crotch section 8. This border contour 32, 34 is also arch-shaped in the representation according to Figure 1 and therefore suited for delimiting the leg openings 19.

10 Through this extent of the crotch-side region 22 or 26 which faces the leg openings, a relatively great overlapping region 36, 38 between the crotch section 8 and the stomach section 4 or back section 6 is realized, which is important with regard to a tear resistant connection of crotch section 8 and stomach section 4.

15 The respective crotch-side region 22, 26 of the stomach section 4 or the back section 6 which crotch-side region 22, 26 faces the leg openings 19, is also configured elastified and is provided with second elastifying means 40 or 42. The second elastifying means 40, 42 extend, in each case starting from the lateral seam regions  
20 14, in the direction towards a longitudinal center axis 44 of the incontinence article. As can be seen from Figure 1, the second elastifying means 40, 42 fan out in the direction towards the longitudinal center axis 44. This means, that the distance between them in the direction towards the longitudinal center axis 44 increases. The second elastifying means 40, 42 pass underneath the crotch section 8. In the region  
25 below the absorption body 7, they may be deactivated i.e. they may not possess their elastifying effect.

30 As can be seen from Figures 2a, b, the crotch section 8 includes a liquid-impermeable backsheet material 62, which in particular can be formed by a breathable, but liquid-tight foil material and a preferably nonwoven-based topsheet

material 64. The absorption body 7 (only shown schematically) is arranged between the backsheet material and the topsheet material. In the exemplary shown case, the backsheet material 62 forms an overhang 66 over the absorption body 7 in transverse direction 16. The topsheet 64 protrudes over the absorption body 7 in transverse direction 16 only to a relatively small degree and an upright barrier means 68 is provided on both sides of the absorption body 7. The barrier means 68 extends in a longitudinal direction 9, and is typically referred to as upright cuff element and is preferably made of a hydrophobic, in particular liquid-impermeable nonwoven material which extends in transverse direction 16 as far as to lateral longitudinal borders 69 of the crotch section 8. The distal ends 70 of the barrier means 68 are provided with further elastifying means 72 which raise the barrier means 68 during use of the incontinence article relative to the skin surface of the user. The lateral barrier means 68 are fastened on the topsheet 64 or onto themselves in a C – shape-folded configuration via schematically indicated fixations 76, 77. Outside of the absorption body 7 i.e., in the region of the protrusion 66, leg elastifying means 78 are provided, which preferably extend at a defined distance to the material-rich and with this rather bending stiff absorption body 7, in order on one hand, to prevent exerting additional stretching or distortion forces on the absorption body, which might negatively influence the absorption properties of the absorption body and on the other hand to realize a liquid-tight leg sealing, which to the most degree is not influenced by the absorption body. These leg elastifying means 78 end in longitudinal direction 9 with a significant distance of in particular 10 mm, preferably at least 20 mm before the second elastifying means 40 and 42 of the stomach section 4 or the back section 6. Preferably, these leg elastifying means 78 end in longitudinal direction 8 before the stomach section 4 and the back section 6.

In the following, the fixing of the crotch section 8 in the front overlapping region 36 with the stomach section 4 and in the rear overlapping region 38 with the back section 6 is described. As can be seen in figures 3 and 4, for this purpose, adhesive is not applied to the entire surface, but multiple adhesive strips 80 are provided in the

5 overlapping region and extend in transverse direction 16 and parallel to one another and are spaced apart by adhesive-free strips 82. The adhesive strips 80 occupy or overlap essentially the entire respective overlapping region 36, 38. In the exemplary shown, however, not strictly required case, broader adhesive strips 88 and 90 are provided in a border region 84 and a border region 86 of the respective overlapping region 36, 38, which border region 84 is located waist-side in longitudinal direction and which border region 86 faces away from the waist in longitudinal direction. The respective border-side i.e., waist-facing and waist-distal adhesive strips 88, 90 have a greater width than the multitude of adhesive strips 80 which are located inwardly and between the adhesive strips 88, 90. In an exemplary embodiment, the width of the border-side adhesive strips 88, 90 transverse to their extension is 14 mm, the width of the inwardly located adhesive strips 80 is 2 mm and the width of the adhesive-free strips 82 is 3 mm. In the exemplary and preferred shown case, the inwardly located adhesive strips 80 preferably all have the same width and the distances between them i.e., the width of the adhesive free strips 82 are preferably also the same. Nevertheless, the same explanations set forth in the beginning apply with regard to the dimensions and the conditions described there, as well as with regard to the mass per area of the adhesive coating of the adhesive strips. The surface of the front and rear overlapping region 36, 38 relative to the surface of the stomach section 4 or the back section 6 also lies within the previously explained preferred ranges.

25 It can further be seen from figure 3 in conjunction with figure 1 that the second elastifying means 40, 42 in the respective overlapping region 36, 38 extend parallel to the adhesive strips 80. In the exemplary shown case, some of the first elastifying means 28 also extend in the front and rear overlapping region 36, 38 (however on the body-facing side of the crotch section). The second elastifying means 40, 42 were also introduced so as to be continuous in the transverse direction 16; they are de-elastified in the respective overlapping region 36, 38 by the aforementioned measures. However, the second elastifying means proved to remain visible also in

the de-elastified state – as explained above. However, they are concealed by the multitude of adhesive strips 80, thereby reducing their visibility.

5 In the preferred shown case, the second elastifying means are fixed in a glue bed 92 between chassis material layers 92 and 96 or 95 and 97 (c.f. figure 5). The glue bed 92 is applied on one of the chassis material layers 94, 96 or 95, 97. Then, the second elastifying means 40, 42 are placed on or introduced preferably in an endless manner and covered and laminated by the further chassis material layer. In this way, the second elastifying means 40, 42 are fixed and the chassis material layers 94 and 96 or 95 and 97 are joined to each other over their entire surfaces. The body-averted chassis material layer 94, 95 is a breathable fiber nonwoven material, which corresponds to the extent of the stomach section 4 or back section 6. The chassis material layer 96, 97 is a fiber nonwoven material which is backwardly offset relative to this. In the preferred shown case, it ends in longitudinal direction 9 before the longitudinal end 98, 99 of the crotch section 8.

15 In the exemplary and preferred shown case, the first elastifying means 28, 29 are fixed between the body averted chassis material layer 94 or 95 and a further body facing chassis material layer 100, 101 by application of adhesive to individual strands. The further chassis material layer 100, 101 is again formed by a nonwoven material. The body-averted and the body-facing chassis material layers are exclusively interconnected by the first elastifying means 28, 29 to which adhesive has been individually applied i.e., only along the extent of these first elastifying means 28, 29. The skin friendly nonwoven materials are therefore not fixed to one another over their entire surfaces, but can detached from one another and, in particular as a result of the elastifying effect, can form pleatings and cuffs. In the preferred shown case, the body-facing chassis material layer 100, 101 extends in the stomach section 4 as well as in the back section 6 over the respective longitudinal end 98, 99 of the crotch section 8 on its body facing-side. It thus overlaps this material transition and in this way prevents an unevenness that leads to skin irritation.

Further, it can be seen in figure 5 that the backsheet 62 of the crotch section 8 has a coating 102 on its body-averted side. This coating 102 is a fiber nonwoven coating of the substantially liquid-impermeable backsheet 62. The coating 102 extends in longitudinal direction 9, however, not over the entire longitudinal extent of the backsheet 62 but instead ends relatively short within the front and rear overlapping region 36, 38. Outside of the overlapping region, the coating 102 is provided over the entire extent of the body-averted side of the back sheet 62. The coating 102 is preferably composed of a nonwoven material, in particular of a spunbond material, in particular of polypropylene, in particular with a mass per area of 10 – 20 g/m<sup>2</sup>, in particular of 12 – 17g/m<sup>2</sup>.

Finally, figure 6 shows a schematic view of an incontinence article according to an embodiment of the invention in the finished configured state in which the stomach section 4 and the back section 6 are joined to one another by formation of lateral seam regions 14. Only schematically shown are pleatings or cuffs 104 formed as a result of the contracting effect of the first and second elastifying means 28, 29, 40, 42, resulting from the fixing of the elastifying means in the pre-tensioned state on the chassis materials (stretch bond method). As a result of the multitude of relatively fine adhesive strips 80 in the respective overlapping region 36, 38 of crotch section 8 and stomach section 4 or back section 6, a visually and/or haptic perceivable structure 106 is formed in the outer visible side of the incontinence article in the respective overlapping region 36, 38 which is here only shown as outline. According to an embodiment of the invention, it was found that the adhesive applied in strip-shape enters into the three-dimensional porous and also breathable configured fiber nonwoven materials, which are typically used as chassis materials, and leads to such an optical and/or haptic perceivable structure 106, which can be advantageous as mentioned before. In addition, the connection of the crotch section 8 and stomach section 4 or back section 6 by the multitude of relatively narrow adhesive strips 80 leads to a very cost effective use of adhesive while at the same time nevertheless

providing the required holding forces for securely joining the three components to one another.

5 Figure 7 explains the measurements, dimensions and ratios of the incontinence article according to an embodiment of the invention. It can be seen that the position of the transverse center axis 30 halves the overall length of the incontinence article in the flatly spread out state (according to figure 1). The transverse center axis 30 also forms a first folding axis 16 which extends in transverse direction 16, and about which the components are folded inside the manufacturing machine in order to arrange the longitudinal border sections 10, 12 of the stomach section 4 and back section 6 on top of one another for fixing and forming lateral seam regions 14 on both sides. Typically, this occurs by guiding endless, flat materials which form the respective stomach section 4 and back section 6 i.e., even before the separation of the articles. The length L1 between the transverse center axis 30 and the respective waist border 15 17 can be seen. Further, the extent L2 of the respective lateral seam or the lateral seam region 14 in longitudinal direction 9 can be seen, which also corresponds to the length of the respective longitudinal border section 10 at 12. According to an embodiment of the invention, the ratio L2/L1 is at least 0.42.

20 Further, the distance L4 of the outermost waist-facing first elastifying means 28, 29 in longitudinal direction 9 to the innermost crotch-facing first elastifying means 28, 29 can be seen. According to an embodiment of the invention, the ratio L4/L1 is at most 0.3.

25 It can further be seen, that the first elastifying means 28, 29 have a distance d1 to one another, which is at least 20% greater than the distance of the second elastifying means 40, 42 to one another defined in the lateral seam region 14. In the preferred shown case, the first elastifying means 28, 29 all have the same distance d1 to one another, which is at least 10 mm, in particular 10 to 15 mm. The ratio d1/L4 is preferably 0.08 to 0.25.

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Further, L3 can be seen as the extent of the stomach section 4 and back section 6 in longitudinal direction 9, which for the stomach section 4 is in particular 135 – 260 mm and for the back section 6 in particular 200 – 320 mm.

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Further shown is the extent Q of the stomach section 4 or the back section 6 in transverse direction 16, which enters into ratios L2/Q or L4/Q.

The first elastifying means 28, 29 have a thread strength, which is at least 20% greater than the thread strength of the second elastifying means 40, 42. In addition, the first elastifying means 28, 29 are fixed with a pre-tension with the chassis material layers in the stomach section 4 and in the back section 6, which pretension is 10% greater than that of the second elastifying means.

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Reference is made to the further preferred afore described measurements, dimensions and ratios.

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Figures 8 and 9 show the construction of the absorption body 7 in a top view and in a sectional view along the longitudinal center axis 44. Starting from its body-averted side, the absorption body 7 includes a basic layer 120 made of cellulosic fiber material with an exemplary mass per area of 176 g/m<sup>2</sup>. Depending on the exact two-dimensional extent, the basic layer contains 10 to 14 g of cellulosic fiber material.

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On the basic layer 120, a suction body layer 122 is placed, which is three-dimensionally shaped at least with regard to the mass per area of suction body material. In a center region 124, the suction body layer 122 has a higher mass per area of suction body material than in front and rear regions 126, 127, in longitudinal direction 9. In the exemplary shown case, the mass per area of cellulosic fiber material in the front and rear region 126, 127 of the suction body layer 122 is 162 g/m<sup>2</sup> and in the center region 124 329 g/m<sup>2</sup>. In addition, the suction body layer 122

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includes overall about 7 g of superabsorbent polymer materials, which are homogenously, evenly distributed in the suction body layer 122. The regions 126, 127 and 124 are offset backward in longitudinal direction 9 relative to the two-dimensional extent of the basic layer 120 as can be seen from figure 8.

Finally, the absorption body 7 includes a body-facing liquid-absorption and distribution layer 128 which in the exemplary and preferred shown case has an hour class-shape, and predominantly extends on the center region 124 of the suction body layer 122. The liquid-absorption and distribution layer 128 protrudes over a stomach-section-side longitudinal end 130 of the center region 124 of the suction body layer 122. It includes a mass per area of fiber material i.e., in the form of intra-cross-linked cellulose fibers (curled fiber) of for example  $149 \text{ g/m}^2$  with an overall mass corresponding to the exemplary extent of about 2.8 g.

The basic layer 120, the three regions 124, 126 and 127 of the suction body layer 122 and the body-facing liquid absorption- and distribution layer 128 have a uniform mass per area of suction body materials across their two-dimensional extent.

The mass per area is measured as described above by analyzing a test specimen of 25 mm x 25 mm, which is punched out through all previously described layers of the absorption body 7. The area 132 (25 mm x 25mm) to be punched out is always centered relative to the longitudinal center axis 44, as indicated in Figure 8. When the mass per area in longitudinal direction 9 is determined more frontward or more rearward, the test specimen is accordingly centered relative to the longitudinal center axis 44.

It can be seen that the mass per area of suction body material thus decreases stepwise in the direction toward a stomach-section-side end 134 and in the direction toward a back-section-side end 136 of the absorption body 7. In this way, plateaus 138 are formed between the steps. In the region of these plateaus 138, the mass per

area of suction body material of the layers of the absorption body 7 lying there underneath is preferably but not necessarily, constant.

5 In the shown preferred embodiment of the incontinence article, the mass per area of the absorption body 7, starting from the transverse center axis 30 frontward and backward in the region of the overlap of the body-facing liquid absorption – and distribution layer 128 with the center region 124 of the suction body layer 122, is essentially constant.

10 In figures 8 and 9, plateaus 140, 141 can be seen which adjoin a step 142, 143 anteriorly or posteriorly in the longitudinal direction 9. In the region of these plateaus 140, 141, the mass per area of the absorption body 7 is significantly reduced relative to the mass per area in the region of the transverse center axis 30.

15 In the following, the folding of the incontinence article in pant form for the stacked arrangement of multiple incontinence articles in a packaging for shipment is described by way of the figures 8, 10 and 11: as already mentioned, the transverse center axis 30 forms a first folding axis 150, about which the incontinence article is folded, so that the stomach section 4 and back section 6 can be permanently joined  
20 together for forming lateral seam regions 14 i.e., by conventional joining methods, such as gluing, ultrasound etc. Further, second folding lines 152 which approximately extend in longitudinal direction 9 are only outlined in figure 8, because the folding does not occur in the stretched out state shown in figure 8, but after finishing the pant-shaped incontinence article in the only schematically shown state in figure 10 a.

25 Starting from this outlined state shown in figure 10 a, regions 154 of the stomach section 4 and back section 6 which laterally extend over the crotch section 8 on both sides, are folded in the direction towards the longitudinal center axis 44, preferably onto the outsides of the stomach section 4, so that the configuration outlined in figure 10 b is obtained.

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5 Finally, figures 8 and 10 show a third folding axis 156, which extends in transverse direction 16, and whose position relative to the absorption body 7 can be seen from figure 8. Further folding about this only further folding axis 156 which extends in transverse direction 16, results in the compactly folded configuration of the pant-shaped incontinence article shown in figure 10 c. It can be seen that the waist border 17, which delimits the waist opening 18, does not protrude in longitudinal direction 9 over the outer folding edge 158 of the incontinence article, which folding edge 158 is formed by the first folding axis 150.

10 Finally, figure 11 illustrates, at which sites the thickness of the incontinence article 2, which is folded into the configuration of figure 10 c, is determined. As already mentioned, the entire such folded incontinence article 2 is punched out over the entire transverse direction 16 with a punching knife at a distance of about 10 mm to the folding edges or folding axes 150 and 156, thereby forming strip-shaped test specimens 160. Based on these test specimens 160, which include all layers of the incontinence article, the thickness is then determined as described above.

## Patent claims

1. Incontinence article in pant form for absorbing bodily excretions, with a front stomach section and a rear back section, which are formed by separate components that are spaced apart in a longitudinal direction along a longitudinal center axis, however, which are connected at lateral seam regions at both sides by the manufacturer for forming a stomach or back band which is continuous in transverse or waist circumferential direction and has a waist opening which is closed in waist circumferential direction, wherein one respective lateral seam is formed which extends in longitudinal direction, and with a crotch section which has an absorption body and extends in the longitudinal direction between stomach section and back section and is non detachably attached with its body averted side on the stomach section and the back section in a respective overlapping region, wherein the stomach section, the back section and the crotch section together delimit leg openings of the incontinence article, wherein in the stomach section and the back section first elastifying means are provided, which extend spaced apart an in parallel relationship to one another in transverse or waist circumferential direction and in this way two-dimensionally elastify the back section, wherein in a region of the stomach section which is crotch side and faces the leg openings, second elastifying means are provided which starting from the two later seam regions fan out arch like in the direction toward the longitudinal center axis of the incontinence article with increasing distance to one another and extend as far as into the overlapping region of the crotch section and back section or of the crotch section and stomach section, wherein there, they may no longer possess their elastifying effect, and can in particular be cut, wherein the extent of the respective lateral seam in longitudinal direction is 100 – 170 mm and that the ration between the extent of the respective lateral seam in longitudinal direction and the extent of the incontinence article between waist border and a transverse center axis is at most 0.42, and in that in the stomach section (4)

5 and in the back section the ration between the distance of the outermost waist facing first elastifying means in longitudinal direction to the innermost waist facing first elastifying means and the extent of the incontinence article between waist border and the transverse center axis is at most 0.3, and in that the first elastifying means have a distance to one another which is at least 20% greater than distance between the second elastifying means to one another defined in the lateral seam region, and in that the first elastifying means have a thread strength which is greater by at least 20% than a thread strength of the second elastifying means and are fixed in the stomach section and in the back section with a pre-tension which is greater by at least 10% than a pre-tension of the second elastifying means.

15 2. Incontinence article according to claim 1, wherein the ration between the extend of the respective lateral seam in longitudinal and the extent of the incontinence article between waist border and a transverse center axis is at most 0.4, such as 0.39 or 0.38 and may be at least 0.25, or at least 0.30.

20 3. Incontinence article according to claim 1 or 2, wherein in the stomach section and in the back section the ration between the distance of the outermost waist facing first elastifying means in longitudinal direction from the innermost crotch facing first elastifying means and the extent of the incontinence article between waist border and the transverse center axis is at most 0.29, and may be at least 0.12, at least 0.15, or at least 0.18.

25 4. Incontinence article according to any one of claims 1 to 3, wherein in the stomach section and in the back section the distance of the outermost waist facing first elastifying means in longitudinal direction to the innermost waist facing first elastifying means is at most 120 mm, such as at most 110 mm, at most 100 mm or at most 90 mm and may be at least 60 mm, such as at least 70 mm, 70 – 110 mm, 70 – 100 mm, or 70 – 90 mm.

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5. Incontinence article according to any one of the preceding claims, wherein the maximal extent of the stomach section in longitudinal direction is 135 – 260 mm, such as 145 – 250 mm, and/or the maximal extent of the back section in longitudinal direction is 200 – 320 mm, such as 210 - 310 mm.
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6. Incontinence article according to any one of the preceding claims, wherein a minimal distance of the stomach section and the back section to each other in longitudinal direction is 250 – 400 mm, such as 270 – 400 mm, or 300 – 390 mm.
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7. Incontinence article according to any one of the preceding claims, wherein the ration between the extent the extent of the respective lateral seam in longitudinal direction and the extent of the stomach section or back section in transverse direction is at most 0.22, such as at most 0.20, and may be at least 0.10, such as at least 0.14.
- 20
8. Incontinence article according to any one of the preceding claims, wherein in the stomach section and in the back section the ration between the distance of the outermost waist facing first elastifying means in longitudinal direction from the innermost crotch facing first elastifying means and the extent of the stomach section or the back section in transverse direction is at most 0.15, such as at most 0.14 or at most 0.13, and may be at least 0.05, at least 0.08, or at least 0.10.
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9. Incontinence article according to any one of the preceding claims, wherein in the stomach section and/or in the back section, the ration between the distance of the first elastifying means in longitudinal direction to one another and the distance of the outermost waist facing first elastifying means in longitudinal direction from the innermost crotch facing first elastifying means is
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between 0.08 and 0.25, such as between 0.09 and 0.20 or between 0.10 and 0.18.

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10. Incontinence article according to any one of the preceding claims, wherein the distance of the first elastifying means in longitudinal direction to each other is at least 8 mm, such as at least 10 mm, at least 10 – 15 mm, at least 11 – 14 mm or at least 12 – 13 mm.
- 10
11. Incontinence article according to any one of the preceding claims, wherein the first elastifying means have a distance to one another, which is at least 30%, such as at least 50%, 200%, 180 % or 150% greater than the distance defined in the lateral seam region of the second elastifying means to each other.
- 15
12. Incontinence article according to any one of the preceding claims, wherein a minimal distance of the second elastifying means to each other in the lateral seam regions is 3 – 8 mm, such as 3 – 7 mm or 3- 6 mm.
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13. Incontinence article according to any one of the preceding claims, wherein the first elastifying means have a thread strength which is greater than a thread strength of the second elastifying means by at least 30%, such as by at least 50%, and may be at most 150%, such as at most 130 %, or at most 100 %.
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14. Incontinence article according to any one of the preceding claims, wherein the thread strength of the first elastifying means is at least 1000 dtex, such as at least 1100 dtex, at least 1200 dtex, such as 1200 -1500 dtex, or 1200 – 1400 dtex.
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15. Incontinence article according to one any one of the preceding claims, wherein the thread strength of the second elastifying means is 500 -1100 dtex, such as 600 – 1000 dtex, or 700 – 900 dtex.

- 5
16. Incontinence article according to any one of the preceding claims, wherein the first elastifying means are fixed with a pretension that is greater than a pretension of the second elastifying means by at least 30%, such as 100%, 80%, or 60%.
17. Incontinence article according to any of the preceding claims, wherein the first elastifying means is fixed with a pretension of 3-8, such as 4-7 or 4-6.
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18. Incontinence article according to any one of the preceding claims, wherein the second elastifying means are fixed with a pretension of 2-5, such as 2.5 – 4.5, 2.5 – 4 or 3 – 4.
- 15
19. Incontinence article according to any one of the preceding claims, wherein the second elastifying means are arranged and fixed between a chassis material layer which forms a visible side of the stomach section or the back section, and is preferably made of non woven, and a chassis material layer which lies inwardly relative to the other chassis material layer and is preferably made of nonwoven, wherein the inwardly lying chassis material layer longitudinal direction of the incontinence article does essentially not extend past the associated overlapping region of the crotch section and stomach section or crotch section and back section.
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20. Incontinence article according to any one of the preceding claims, wherein the second elastifying means are fixed in a glue bed between chassis material layers and/or the first elastifying means are fixed between chassis material layers by applying adhesive to individual strands.
- 25
21. Incontinence article according to any one or more of the preceding claims, wherein the first elastifying means in the stomach section and in the back
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section are fixed between a body averted chassis material layer and a body facing chassis material layer by applying adhesive to individual strands, and in that the body facing chassis material layer protrudes over the associated end of the crotch section on the side of the crotch section which faces the body.

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22. Incontinence article according to any one of the preceding claims, wherein the first elastifying means in the stomach section and the back section are fixed between a body averted chassis material layer and a body facing chassis material layer by applying adhesive to individual strands, wherein on the waist border none of the chassis material layers is folded about the other one, and in that the body-facing chassis material layer and the body averted chassis material layer along the waist opening on the waist border are not fixed to one another, so that they respectively form a freely ending waist side border section.

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23. Incontinence article according to any one of the preceding claims, wherein the surface of the overlapping region of crotch section and stomach section relative to the surface of the stomach section is at least 20%, such as 20 – 35 % or 20 – 30% and/or that the surface of the overlapping region of the crotch section and back section relative to the surface of the back section is at least 25%, such as 25 – 45%, 25 – 40 % or 27 – 40 %.

20

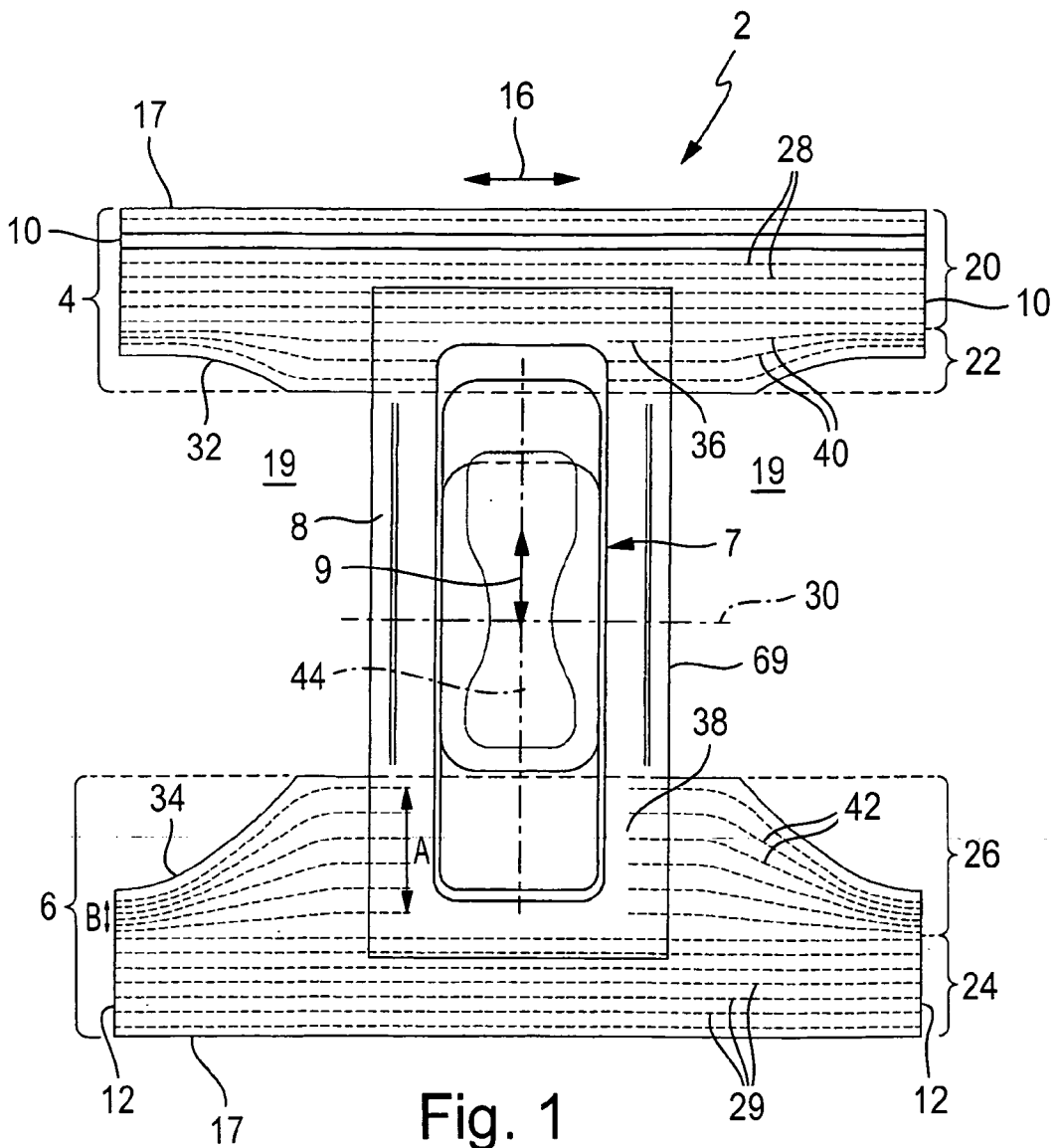


Fig. 1

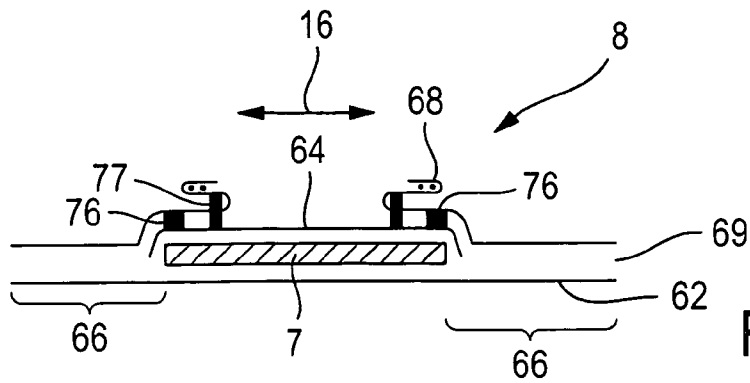


Fig. 2a

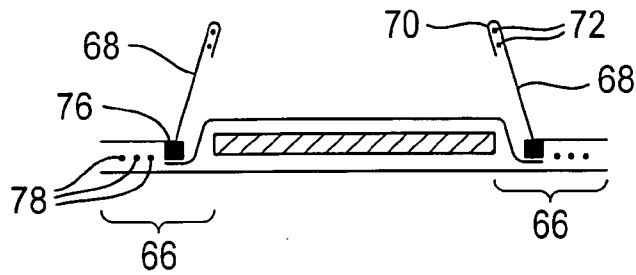


Fig. 2b

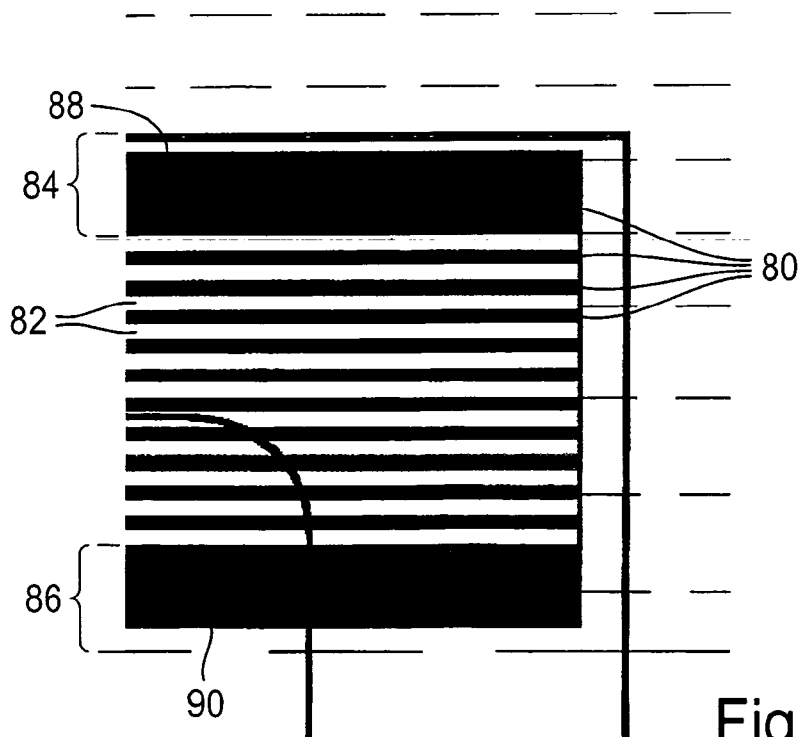


Fig. 4

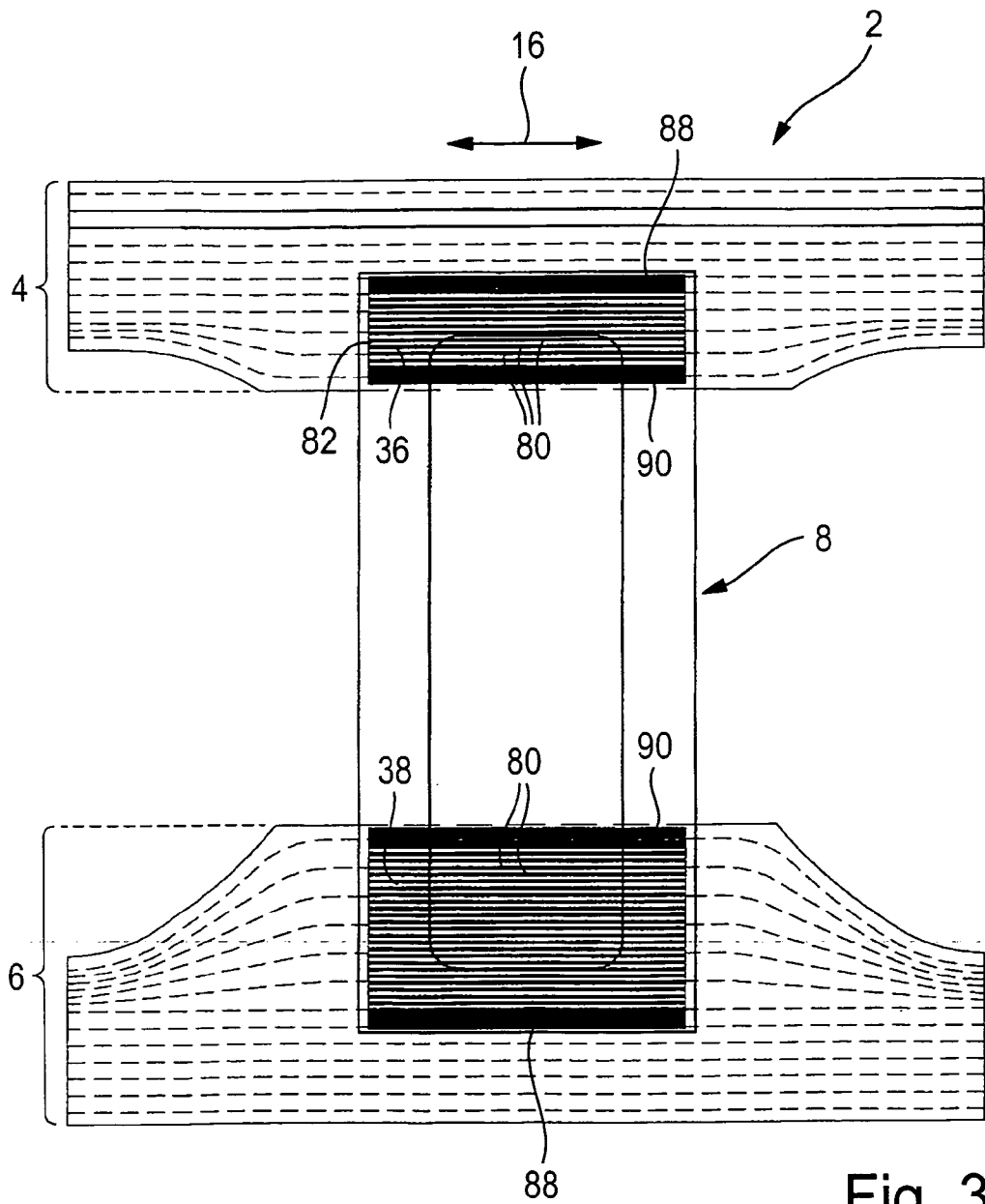


Fig. 3

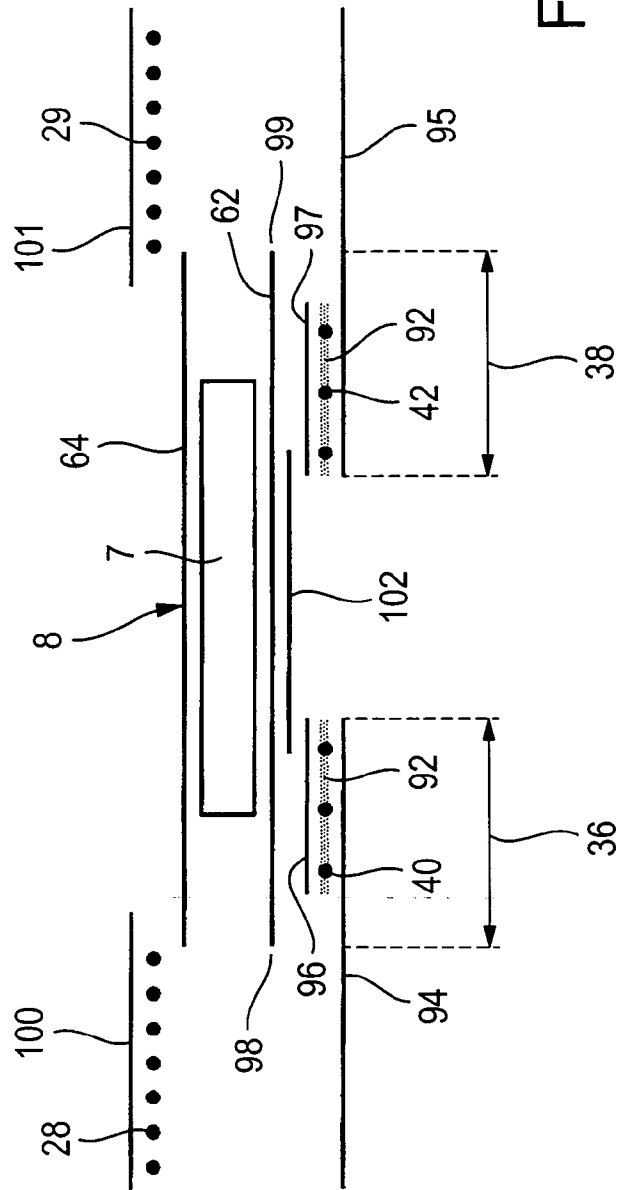


Fig. 5

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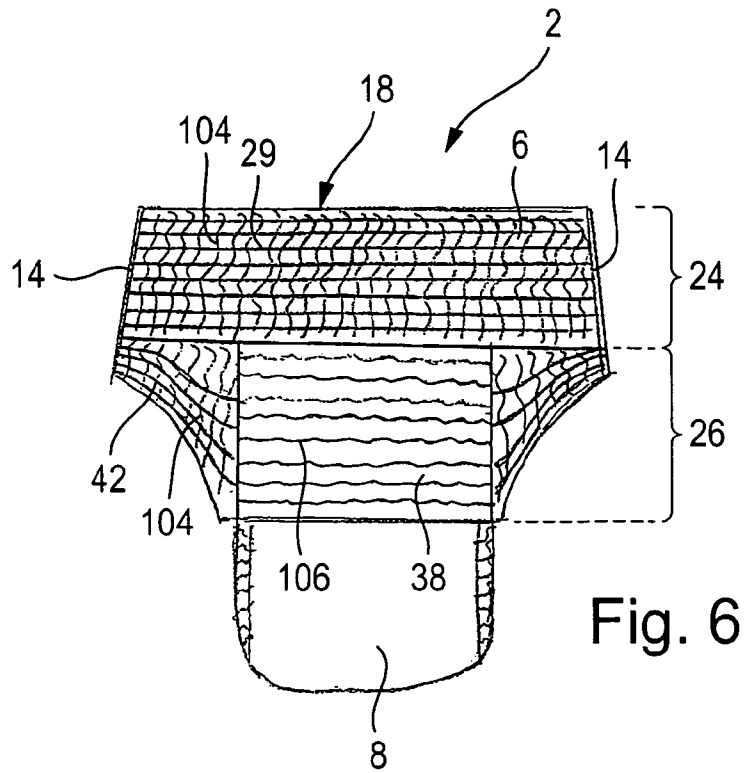


Fig. 6

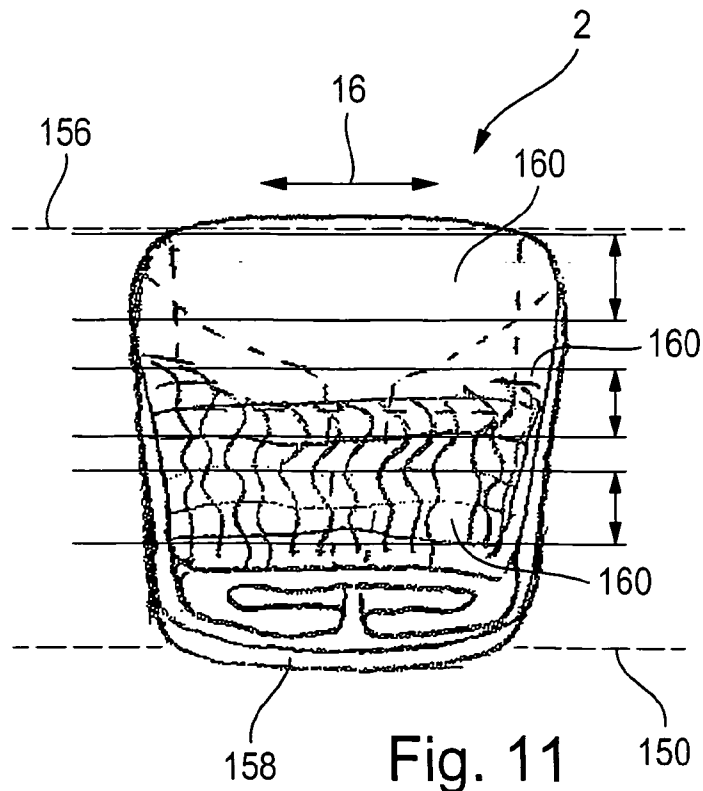


Fig. 11

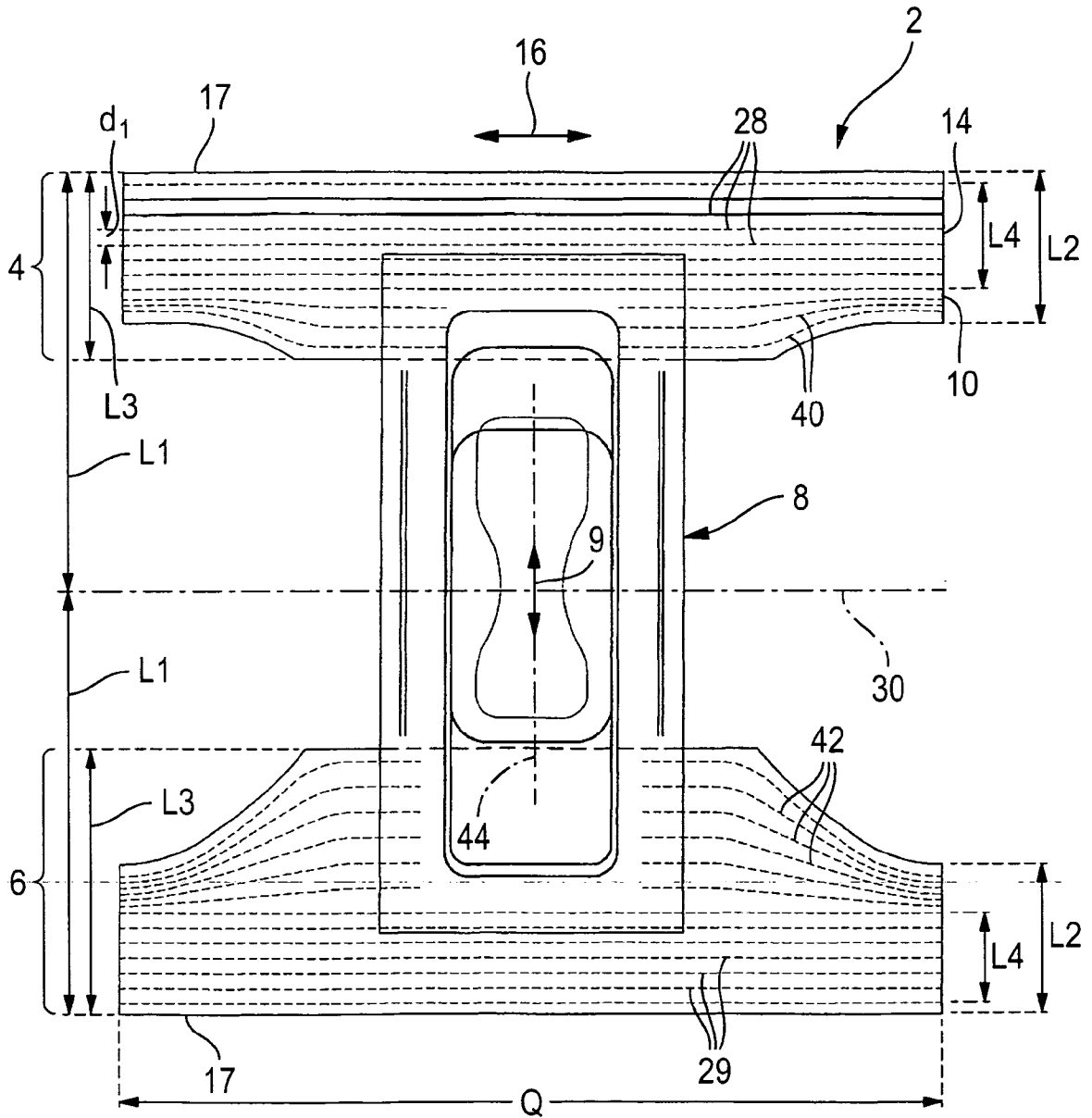


Fig. 7

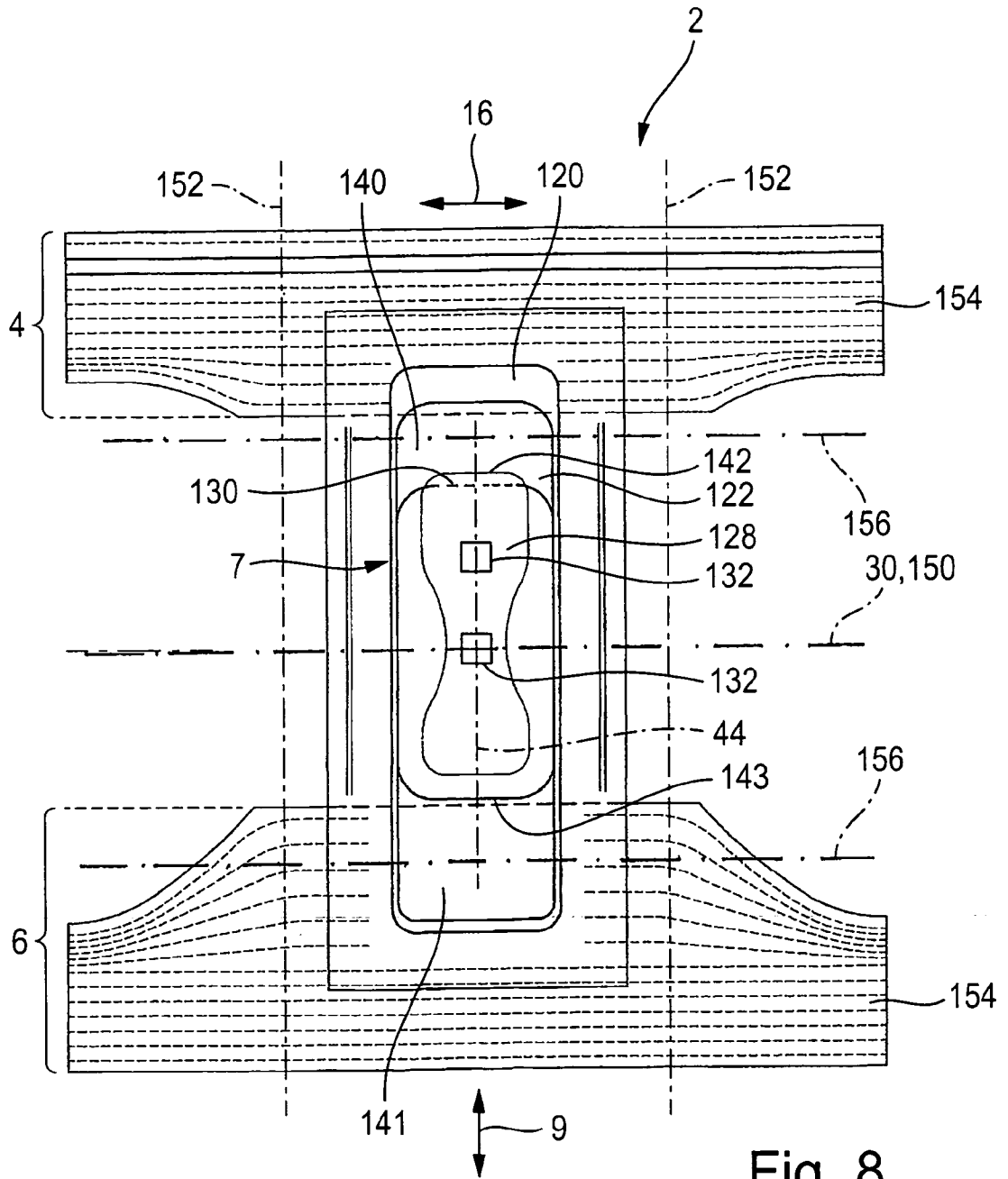


Fig. 8



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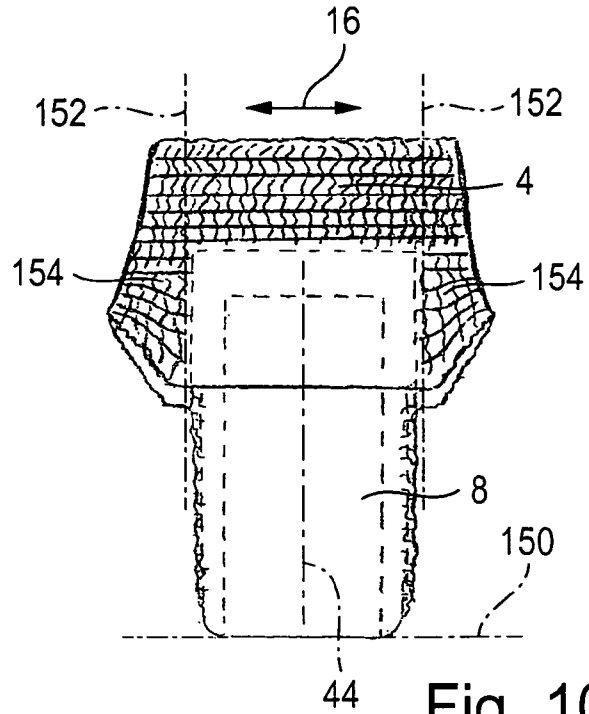


Fig. 10a

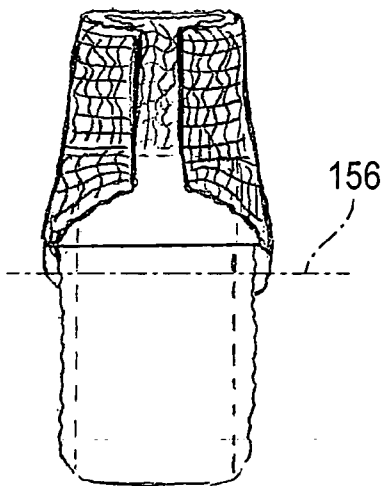


Fig. 10b

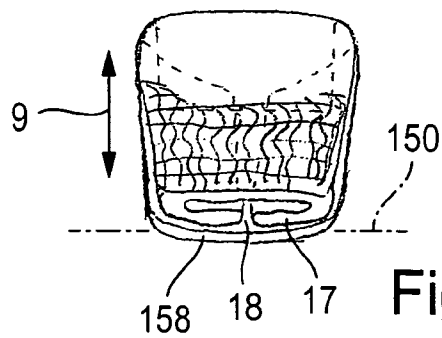


Fig. 10c