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(54) Title: FOLDED DISPOSABLE INCONTINENCE PADS

(54) Bezeichnung: GEFALTETE INKONTINENZWEGWERFWINDELN

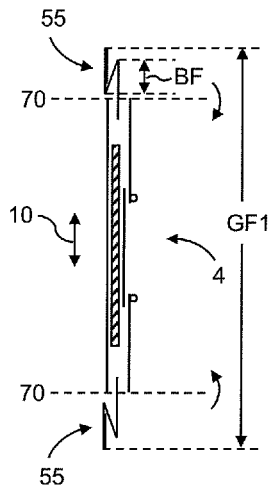


Fig. 6b

(57) Abstract: The invention relates to an arrangement comprising folded disposable incontinence pads of at least a first size and folded disposable incontinence pads of a second size and folded disposable incontinence pads of a third size, the disposable incontinence pads of the first size (100) having a first maximum span MS1, disposable incontinence pads of the second size having a second maximum span MS2, the disposable incontinence pads of the third size having a third maximum span MS3, where $MS1 \neq MS2 \neq MS3$ and $MS1 \neq MS3$. The rear side sections are folded onto themselves along a number N of side section fold axes extending in the longitudinal direction to form a first fold arrangement. The first fold arrangement of the disposable incontinence pads of the first size differs by at least one feature from the first fold arrangement of the disposable incontinence pads of the second size and from the first fold arrangement of the disposable incontinence pads of the third size, said feature or features being selected from the following group: - number N of side section fold axes along which the rear side sections (22) are folded onto themselves to form the first fold arrangement; - distance AB of the outermost fold line of the first fold arrangement from a free end (41) of a respective rear side section (22); - span GF1 of the disposable incontinence pads with the first fold arrangement; - width BF of the first fold arrangement.

(57) Zusammenfassung: Die Erfindung betrifft eine Anordnung umfassend gefaltete Inkontinenzwegwerfwindeln zumindest einer ersten Größe und gefaltete Inkontinenzwegwerfwindeln einer zweiten Größe und gefaltete Inkontinenzwegwerfwindeln einer dritten Größe, wobei die Inkontinenzwegwerfwindeln der ersten Größe (100) eine erste maximale Spannweite MS1 aufweisen, wobei Inkontinenzwegwerfwindeln der zweiten Größe eine zweite maximale Spannweite MS2 aufweisen, wobei die Inkontinenzwegwerfwindeln der dritten Größe eine dritte maximale Spannweite MS3 aufweisen, wobei gilt $MS1 \neq MS2 \neq MS3$ und $MS1 \neq MS3$, wobei die hinteren Seitenabschnitte an einer Anzahl N in der Längsrichtung verlaufender Seitenabschnitt-Falzachsen zu einer ersten Faltanordnung auf sich selbst gefaltet sind, wobei die erste Faltanordnung der Inkontinenzwegwerfwindeln der ersten Größe sich von der ersten Faltanordnung der Inkontinenzwegwerfwindeln der zweiten Größe und von der ersten Faltanordnung der Inkontinenzwegwerfwindeln der dritten Größe in wenigstens einem Merkmal unterscheidet, wobei das oder die Merkmale ausgewählt sind aus der Gruppe - Anzahl N von Seitenabschnitt-Falzachsen, an der die



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Title: Folded disposable incontinence diapers**Description**

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The present invention relates to folded disposable incontinence diapers for taking up bodily excretions, for preferred use by adults.

10 Disposable incontinence diapers of this kind are known and often have a main part (chassis) consisting of a front region, a back region, and, lying between these in the longitudinal direction of the diaper, a crotch region that comes to lie between the legs of a user, wherein the
15 main part usually already comprises an absorbent body for absorbing liquids, and with rear side portions, so-called diaper ears, which are joined on both sides to rear lateral longitudinal edges of the back region, are separate from each other, are preferably provided with
20 closure means and, in the transverse direction of the diaper, extend beyond the rear lateral longitudinal edges of the main part and connect the front region and the back region to each other when the diaper is in the fitted state.

25 This open diaper type, in contrast to the pants type, is usually placed on the body in such a way that the rear side portions of the diaper are brought to overlap, to a differing extent depending on the anatomical conditions, with an outer side of the front region of the diaper and
30 are affixed there releasably, in particular by adhesive or mechanical closure means. A diaper of this kind is known from WO2017/140604A1, for example.

Disposable incontinence diapers are usually produced in
35 high-speed machines. Protruding components, for example laterally protruding side portions, may easily become damaged. It is therefore customary for side portions of

disposable incontinence diapers to be folded onto the chassis in the production process. In such cases, the side portions may easily become creased and kinked in packaging processes. This often has the effect that the products look unattractive when they are unpacked by the user. In addition, the function of closure means attached to the side portions may be impaired by kinks.

Since there are many groups of users reliant on using diapers of different sizes or absorption strength, it is customary for the dimensions of disposable incontinence diapers, such as the extent in the hip circumferential direction, to be adapted to the body size and body shape of different user groups. This may have the disadvantage of leading to differences in the packaging and logistics of diapers of different sizes, for example on account of different dimensions of packages.

There is therefore a need for disposable incontinence diapers which are manufactured in such a way that they look attractive to the user and are not impaired in terms of their functionality. There is also a need for disposable incontinence diapers which permit simpler packaging and logistics.

WO2007/058761A1 discloses absorbent articles with closure elements which are attached to diaper ears folded onto the chassis and which come to lie in the overlap region when the side edges of the chassis are folded in. This fold arrangement can lead to different final dimensions in the case of diapers of different sizes or in the case of diapers with diaper ears of different widths.

WO2005/110321A1 discloses an absorbent article which is folded in such a way that part of a respective diaper ear comes to lie protruding outward and can be easily

grasped. However, protruding parts of the diaper ear could become kinked during the packaging of the articles, which can have a disadvantageous effect in particular on the function of closure means attached in this region.

5

It is desirable for at least one embodiment of the present invention to make available disposable incontinence diapers of different sizes which take account of the requirements for uniform packaging and logistics processes, which look attractive when removed from the packaging, and/or whose functionality is not impaired.

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Reference to any prior art in the specification is not an acknowledgement or suggestion that this prior art forms part of the common general knowledge in any jurisdiction or that this prior art could reasonably be expected to be combined with any other piece of prior art by a skilled person in the art.

15

By way of clarification and for avoidance of doubt, as used herein and except where the context requires otherwise, the term "comprise" and variations of the term, such as "comprising", "comprises" and "comprised", are not intended to exclude further additions, components, integers or steps.

20

In an aspect, the present invention provides an arrangement comprising folded disposable incontinence diapers at least of a first size and folded disposable incontinence diapers of a second size and folded disposable incontinence diapers of a third size,

30

a) wherein the disposable incontinence diapers have a longitudinal direction and a transverse direction and furthermore have an absorbent body and a main

5 part comprising a front region with front lateral longitudinal edges and a back region with rear lateral longitudinal edges, and, arranged between these, a crotch region that comes to lie between the legs of a user, and with rear side portions which are joined to the back region on both sides and which extend in the transverse direction beyond the lateral rear longitudinal edges of the main part, and wherein the rear side portions have a component 10 which is elastic in the transverse direction, wherein the rear side portions, in the region of their free end in the transverse direction, each have at least one closure means,

15 b) wherein the rear side portions for placing and closing the disposable incontinence diapers on a user can each be placed around the body of the user along a circumferential direction and can be brought

- into an overlapping arrangement with an outer side of the front region, on which they can each be releasably affixed via the respective closure means,
- 5 c) wherein the disposable incontinence diapers of the first size have a first maximum span MS1,
- d) wherein disposable incontinence diapers of the second size have a second maximum span MS2,
- e) wherein the disposable incontinence diapers of the third size have a third maximum span MS3,
- 10 f) wherein $MS1 \neq MS2 \neq MS3$ and $MS1 \neq MS3$,
- g) wherein the rear side portions are folded onto themselves at a number N of side-portion fold axes running in the longitudinal direction in order to form a first fold arrangement,
- 15 h) wherein the first fold arrangement, in each case at a first product fold axis running in the longitudinal direction, is folded inward onto a body-facing inner side of the main part in order to form a second fold arrangement,
- 20 i) wherein the second fold arrangement, in each case at a second product fold axis running in the longitudinal direction, is folded inward in order to form a third fold arrangement,
- 25 j) wherein the first fold arrangement of the disposable incontinence diapers of the first size differs from the first fold arrangement of the disposable incontinence diapers of the second size and from the first fold arrangement of the disposable incontinence diapers of the third size in at least
- 30 one feature, wherein the one or more features are selected from the group
- number N of side-portion fold axes at which the rear side portions are folded onto themselves
- 35 in order to form the first fold arrangement

- distance AB of an outermost fold line of the first fold arrangement from the free end of the respective rear side portion
- span GF1 of the disposable incontinence diapers with the first fold arrangement
- width BF of the first fold arrangement.

An arrangement and also a sub-arrangement result from the expedient preparation of the disposable incontinence diapers belonging to the arrangement/sub-arrangement. In particular through the relationship of the articles to each other. This is done either by presentation in a common packaging unit and/or preferably by applying labels to the disposable incontinence diapers and/or their packaging and/or the presentation in spatial or content proximity to one another, which indicate the allocation to an arrangement or to a sub-arrangement. The disposable incontinence diapers forming the arrangement/sub-arrangement preferably originate from one and the same manufacturer.

The disposable incontinence diapers forming an arrangement/sub-arrangement preferably have the same product identification, such as brand name and/or sub-brand name.

An arrangement of disposable incontinence diapers of the first size and disposable incontinence diapers of the second size and disposable incontinence diapers of the third size is understood as at least one representative thereof and includes a plurality of disposable incontinence diapers of the first size and/or disposable incontinence diapers of the second size and/or disposable incontinence diapers of the third size, or packs and packaging units containing them.

An arrangement can furthermore comprise a fourth and/or a fifth size of folded disposable incontinence diapers.

Further preferably, the arrangement can comprise a first
5 sub-arrangement of disposable incontinence diapers of the first size and/or a second sub-arrangement of disposable incontinence diapers of the second size and/or a third sub-arrangement of disposable incontinence diapers of the third size and/or a fourth sub-arrangement of disposable
10 incontinence diapers of the fourth size and/or a fifth sub-arrangement of disposable incontinence diapers of the fifth size.

The first sub-arrangement of the first size comprises at least disposable incontinence diapers of a first
15 absorption strength and disposable incontinence diapers of a second absorption strength.

The second sub-arrangement of the second size comprises at least disposable incontinence diapers of a third absorption strength and disposable incontinence diapers
20 of a fourth absorption strength.

The third sub-arrangement of the third size comprises at least disposable incontinence diapers of a fifth absorption strength and disposable incontinence diapers of a sixth absorption strength.

25 The fourth sub-arrangement of the fourth size comprises at least disposable incontinence diapers of a seventh absorption strength and disposable incontinence diapers of an eighth absorption strength.

The fifth sub-arrangement of the fifth size comprises at
30 least disposable incontinence diapers of a ninth absorption strength and disposable incontinence diapers of a tenth absorption strength.

The first and/or second and/or third and/or fourth and/or
35 fifth sub-arrangement can in each case comprise further absorption strengths.

The first and second absorption strength and/or each further absorption strength of the first sub-arrangement differ from one another.

5 The third and fourth absorption strength and/or each further absorption strength of the second sub-arrangement differ from one another.

The fifth and sixth absorption strength and/or any further absorption strength of the third sub-arrangement differ from one another.

10 The seventh and eighth absorption strength and/or any further absorption strength of the fourth sub-arrangement differ from one another.

The ninth and tenth absorption strength and/or any further absorption strength of the fifth sub-arrangement
15 differ from one another.

In the context of the present invention, it is understood that the absorption strengths differ from one another if the total absorbency levels GSL differ as described
20 below. An absorption strength is considered different from another absorption strength if the total absorbency GSL of the one disposable incontinence diaper deviates by at least 3% from the total absorbency GSL of the other disposable incontinence diaper.

25 Preferably, a total absorbency GSL1 of the disposable incontinence diapers of the first absorption strength is greater than a total absorbency GSL2 of the disposable incontinence diapers of the second absorption strength.

30 According to a preferred variant, the total absorbency GSL1 of the disposable incontinence diaper of the first absorption strength is at least 5%, in particular at least 8%, more particularly at least 10% higher than the total absorbency GSL2 of the disposable incontinence
35 diaper of the second absorption strength.

The maximum span - designated above and/or hereinbelow as MS or MS1 or MS2 or MS3 or MS4 - is to be understood as the maximum transverse extent of the disposable incontinence diaper measured in mm in the back region of the disposable incontinence diaper, that is to say in the region of the rear side portions.

In the context of the present invention, a maximum span of the one disposable incontinence diaper is defined as being different from a maximum span of another disposable incontinence diaper if the maximum span of the one disposable incontinence diaper deviates by at least 6% from the maximum span of the other disposable incontinence diaper. If this deviation is at least 6%, the maximum span of the one disposable incontinence diaper with a higher value is considered greater than the maximum span of the other disposable incontinence diaper with a lower value.

Preferably, the length of the disposable incontinence diapers is 600 mm - 1100 mm, in particular 650 mm - 1050 mm, preferably 700 mm - 1000 mm.

In the first fold arrangement, the rear side portions of the disposable incontinence diapers are folded onto themselves at in each case at least one, in particular at least two, more particularly at least three, in particular more than three fold axes running in the longitudinal direction of the disposable incontinence diaper within the side portions, said fold axes being designated as side-portion fold axes, and they are preferably temporarily and/or releasably fixed in this configuration.

The number N of the side-portion fold axes is to be understood as the number of the fold axes that run in the longitudinal direction within a rear side portion.

In a preferred exemplary embodiment, the number N of the side-portion fold axes running in the longitudinal direction is 1-5, in particular 1-4, in particular 1-3.

5

Preferably, both rear side portions of a disposable incontinence diaper have an equal number N of side-portion fold axes.

10 The width BF of the first fold arrangement is the maximum extent of the region in which at least two layers of the rear side portion come to lie one over the other, measured in mm in the transverse direction of the disposable incontinence diaper.

15

In the second fold arrangement, the rear side portions, which are already pre-folded in the first fold arrangement, are folded at least partially inward in a C shape onto the main part, in particular onto the body-facing inner side of the main part, at in each case a fold axis running in the longitudinal direction, designated as the first product fold axis.

20

The first product fold axis runs in the vicinity of the respective rear lateral longitudinal edge, in this case within the respective rear side portion or within the main part.

25

The second fold arrangement can be temporarily and/or releasably fixed.

30 The third fold arrangement is formed by the second fold arrangement being folded inward in a C shape onto the main part at a fold axis running in the longitudinal direction of the disposable incontinence diaper, designated as the second product fold axis. The second product fold axis runs within the main part of the disposable incontinence diaper. The third fold arrangement can be temporarily and/or releasably fixed.

35

The second and/or third fold arrangement is preferably folded inward, that is to say onto the body-facing inner side of the main part, in order to counteract soiling of the liquid-absorbing upper side of the main part before the disposable incontinence diaper is fitted on a user.

The span GF1 of the disposable incontinence diaper with the first fold arrangement is the maximum extent of the disposable incontinence diaper in the transverse direction in the region of the rear side portions folded onto themselves, i.e. measured in mm from an outer end of a rear side portion folded onto itself to the outer end of the respective other rear side portion folded onto itself.

In the case where the rear side portions in the first fold arrangement are folded onto themselves about an odd number N of side-portion fold axes, for example about one, in a C shape, or about three, in an M shape, the respective free end of the rear side portions faces inward in the direction of the respective other rear side portion. In such a case, the outer end of the folded rear side portion is different from the free end of the respective side portion.

In the case where the rear side portions in the first fold arrangement are folded onto themselves about an even number N of side-portion fold axes, for example about two, in a Z shape, the respective free end of the rear side portions faces outward, that is to say in the direction opposite to the respective other rear side portion. In such a case, the outer end of the folded rear side portion can be identical to the free end of the respective rear side portion. It is likewise conceivable that, in the case of a Z-shaped first fold arrangement, the outer and the free end of a respective rear side portion are different from each other.

The outermost fold line of the first fold arrangement is the one which is closest to the free end of the respective rear side portion in the folded-out state.

5

In a preferred embodiment, the arrangement comprises disposable incontinence diapers of a fourth size with a fourth maximum span MS4, which is different from all of MS1, MS2 and MS3, and wherein the first fold arrangement
10 of the disposable incontinence diapers of the fourth size is different from the first fold arrangement of the disposable incontinence diapers of the first size or third size or second size in at least one feature, wherein the one or more features are selected from the group

15

- number N of side-portion fold axes at which the rear side portions are folded onto themselves in order to form the first fold arrangement
- distance AB of the outermost fold line of the
20 first fold arrangement from the free end of the respective rear side portion
- span GF1 of the disposable incontinence diapers with the first fold arrangement
- width BF of the first fold arrangement.

25

Preferably, MS1 and MS2 and MS3 and/or MS4 each measure 500-1300 mm.

Further preferably, at least two, in particular at least
30 three, from the group MS1, MS2, MS3, MS4 each measure 600-1200 mm.

In a preferred embodiment, a ratio GF1 to at least two, in particular at least three, in particular all from the
35 group MS1, MS2, MS3, MS4 is in each case 0.55-0.85, in particular 0.60-0.75.

Furthermore, the disposable incontinence diapers preferably have a span GF2 with a second fold arrangement, and a ratio GF2 to at least two, in particular at least three, in particular all from the group MS1, MS2, MS3, MS4 is preferably in each case 0.40-0.60, in particular 0.45-0.55.

The span GF2 of the disposable incontinence diaper with a second fold arrangement is the maximum extent of the disposable incontinence diaper in the transverse direction in the region of the rear side portions folded onto themselves and folded in a C-shape about the first product fold axis onto the main part of the disposable incontinence diaper.

In a preferred exemplary embodiment, the disposable incontinence diapers have an end fold width EF, and a ratio EF to at least two, in particular at least three, in particular all from the group MS1, MS2, MS3, MS4, is preferably in each case 0.15-0.35, in particular 0.17-0.30.

The end fold width EF is the maximum transverse extent of the disposable incontinence diapers with a third fold arrangement.

The end fold width EF corresponds to the transverse extent of the disposable incontinence diapers in the state when first taken in hand by the user, i.e. in particular in the state as provided by the manufacturer, in which the disposable incontinence diapers are removed from a packaging by the user and/or before the user opens out the third fold arrangement of the disposable incontinence diapers for the purpose of putting them on.

In a preferred embodiment, the end fold width EF of at least two, in particular at least three, in particular all selected from the group of disposable incontinence

diapers of the first size, the second size, the third size and the fourth size is of the same size.

The realization of an identical end fold width EF of
5 disposable incontinence diapers of different sizes and
thus of different maximum spans is facilitated by the
fact that the disposable incontinence diapers of
different sizes and maximum spans have a different number
N of side-portion fold axes and/or the side-portion fold
10 axis or side-portion fold axes and/or the first and/or
second product fold axis in disposable incontinence
diapers of different sizes and maximum spans are
positioned differently.

This affords, for example, process-related advantages in
15 subsequent packaging processes and/or takes into account
the desire of many users for standardization of the
dimensions of packages of disposable incontinence diapers
of different sizes, which in particular facilitates the
logistics and storage by the user.

20

In a preferred exemplary embodiment, the disposable
incontinence diapers are folded about at least one, in
particular about at least two or at least three
transverse fold axes running in the transverse direction
25 in order to form a fourth fold arrangement, wherein none
of the transverse fold axes runs through the respective
rear side portions, in particular none of the transverse
fold axes runs through the respective closure means.

This has the advantage that the structure and/or the
30 function of the closure means and/or of the rear side
portions is not adversely affected by kinks occurring
during folding.

The fourth fold arrangement is to be understood as
35 meaning that the disposable incontinence diapers, which
are already pre-folded in the longitudinal direction on
both sides about in each case one or more than one side-

portion fold axis and/or about in each case one or more than one product fold axis, are preferably additionally folded about one or more than one transverse fold axis. In a fourth fold arrangement, the disposable incontinence
5 diapers are preferably folded about one or more than one transverse fold axis such that the main part of the disposable incontinence diapers is folded onto itself in such a way that an upper side of the main part comes to lie directly or indirectly on itself at least in part.
10 The upper side of the main part can be the side of the main part facing away from the body in the state of use, but in particular the side facing toward the body.

Preferably, the rear side portions have a grip region at
15 a free end, wherein the grip region of at least one of the (left or right) rear side portions is graspable by a user after the fourth fold arrangement and the third fold arrangement have been unfolded, and the second and first fold arrangement can then be unfolded in particular in
20 one go.

In a preferred embodiment, the arrangement comprises a first sub-arrangement of disposable incontinence diapers of the first size and/or a second sub-arrangement of
25 disposable incontinence diapers of the second size, wherein the first sub-arrangement of the first size has at least disposable incontinence diapers of a first absorption strength and disposable incontinence diapers of a second absorption strength, and wherein the second
30 sub-arrangement of the second size has at least disposable incontinence diapers of a third absorption strength and disposable incontinence diapers of a fourth absorption strength, wherein the disposable incontinence diapers of the first absorption strength of the first
35 sub-arrangement have a first rear main-part width CHB1 and a first rear side-portion width EARB1,

- a) wherein the disposable incontinence diapers of the second absorption strength of the first sub-arrangement have a second rear main-part width CHB2 and a second rear side-portion width EARB2,
- 5
- b) wherein the disposable incontinence diapers of the third absorption strength of the second sub-arrangement have a third rear main-part width CHB3 and a third rear side-portion width EARB3,
- 10
- c) wherein the disposable incontinence diapers of the fourth absorption strength of the second sub-arrangement have a fourth rear main-part width CHB4 and a fourth rear side-portion width EARB4,
- 15
- d) wherein $CHB1 > CHB2$ and $EARB1 < EARB2$
and/or wherein
 $CHB3 > CHB4$ and $EARB3 < EARB4$.
- 20
- The rear main-part width, designated as CHB1 or CHB2 or CHB3 or CHB4, of a disposable incontinence diaper is the maximum transverse extent of the main part in the back region, i.e. from a rear lateral longitudinal edge to the opposite rear lateral longitudinal edge in the transverse
- 25
- direction of the disposable incontinence diaper, measured in mm.
- In the context of the present invention, a rear main-part width of a disposable incontinence diaper is considered to be different from a rear main-part width of another
- 30
- disposable incontinence diaper if the rear main-part width of the one disposable incontinence diaper deviates by at least 6% from the rear main-part width of the other disposable incontinence diaper.
- 35
- The greater rear main-part width of the disposable incontinence diapers of the first absorption strength affords the advantage of allowing the absorbent body to

extend farther out, i.e. farther in the transverse direction, in particular in the rear region, as a result of which an undesirable accumulation of absorbent material in the already narrow crotch region can be avoided.

The rear side-portion width, designated as EARB1 or EARB2 or EARB3 or EARB4, of a disposable incontinence diaper is to be understood as the maximum extent of a rear side portion in the transverse direction of the disposable incontinence diaper, i.e. in the hip circumferential direction, beyond the respective rear lateral longitudinal edge, measured in mm.

In the context of the present invention, a rear side-portion width of a disposable incontinence diaper is considered to be different from a rear side-portion width of another disposable incontinence diaper if the rear side-portion width of the one disposable incontinence diaper deviates by at least 3% from the rear side-portion width of the other disposable incontinence diaper.

Preferably, the two rear side portions of a disposable incontinence diaper extend substantially by the same width in the hip circumferential direction.

It will be noted at this point that, in the present application, any dimensional information concerning transverse extent, longitudinal extent of portions or any components of the disposable incontinence diaper are determined in the flattened out state of the flat materials forming the article, such that the article in question can be brought into the flat configuration shown in the figures, provided that there is no other indication of a different state. If the article has been elasticized for example by thread-like elasticating means in the "stretchbond process", then the surface materials, as are indicated in the figures, are considered to be extended as they are when supplied by the manufacturer

as flat materials or to be subsequently extended to their natural initial extent without elasticating means and placed on a flat surface. The transverse extents, longitudinal extents or dimensions are then determined
5 in this flat surface. This state arises naturally in the case of inextensible chassis materials based on a non-woven or based on a film or based on a non-woven/film composite.

10 Deviating from this, all the dimensions of the disposable incontinence diaper with regard to the transverse extent, insofar as they comprise the region of the side portions that is elastic in the transverse direction - namely the maximum span, the side-portion width and the maximum
15 extent of the elastic component of the rear side portions - are measured in the transverse direction only in the spread-out and unfolded but non-stretched state. Measurements in the non-stretched state reflect the state of the product in which the user first perceives it after
20 removing it from the packaging and after the disposable incontinence diaper has been unfolded. In particular, no transverse tensile forces are exerted on the side portions, such as typically occur when the product is fitted on the user.

25 In a preferred embodiment, an absorbent body of the disposable incontinence diapers of the first absorption strength of the first sub-arrangement has a first maximum transverse extent in the back region of QR1 and a first
30 minimum transverse extent in the crotch region of QS1,

wherein an absorbent body of the disposable incontinence diapers of the second absorption strength of the first sub-arrangement has a second
35 maximum transverse extent in the back region of QR2 and has a second minimum transverse extent in the crotch region of QS2,

wherein $QR1/QS1 > QR2/QS2$,
wherein in particular $0.9 < QR2/QS2 < 2.0$,
wherein in particular $1.5 < QR1/QS1 < 3.0$,

5 and/or

an absorbent body of the disposable incontinence diapers
of the third absorption strength of the second sub-
arrangement has a third maximum transverse extent in the
10 back region of QR3 and has a third minimum transverse
extent in the crotch region of QS3,

wherein an absorbent body of the disposable
incontinence diapers of the fourth absorption
15 strength of the second sub-arrangement has a fourth
maximum transverse extent in the back region of QR4
and has a fourth minimum transverse extent in the
crotch region of QS4,
wherein $QR3/QS3 > QR4/QS4$,
20 wherein in particular $0.9 < QR4/QS4 < 2.0$,
wherein in particular $1.5 < QR3/QS3 < 3.0$.

A stronger waisting of the absorbent body in disposable
incontinence diapers with a high absorption strength
25 compared to disposable incontinence diapers with a lower
absorption strength can have a positive effect on the
wearing comfort.

The maximum transverse extent of the absorbent body in
30 the back region and/or the minimum transverse extent of
the absorbent body in the crotch region are each
orthogonal to a longitudinal central axis of the
respective disposable incontinence diaper and are to be
measured in mm.

35 The maximum transverse extent of the absorbent body in
the back region is to be measured in mm at a widest point,
in the transverse direction of the disposable

incontinence diaper, of a subregion of the absorbent body which is placed in a rear product half, i.e. between the rear transverse edge of the disposable incontinence diaper and a transverse central axis of the disposable
5 incontinence diaper.

The minimum transverse extent of the absorbent body in the crotch region is to be measured in mm at a narrowest point of the absorbent body in the crotch region. If no narrowest point of the crotch region in the sense of a
10 genuine minimum is present, as in the case of at least partially straight longitudinal edges of the absorbent body that run parallel to the longitudinal direction, then the measurement is carried out along and at the level of the transverse central axis of the disposable
15 incontinence diaper.

In a preferred embodiment, a ratio of a first crotch segment absorbency SL1 of the disposable incontinence diapers of the first absorption strength to a second
20 crotch segment absorbency SL2 of the disposable incontinence diapers of the second absorption strength is 0.7-1.9, in particular 0.8-1.5, and a ratio of a first total absorbency GSL1 of the disposable incontinence diapers of the first absorption strength to a second
25 total absorbency GSL2 of the disposable incontinence diapers of the second absorption strength is 1.0-2.5, in particular 1.0-2.0.

The total absorbency GSL of a disposable incontinence
30 diaper is to be understood as a maximum amount of liquid that can be taken up by the disposable incontinence diaper according to the measurement method described below.

The crotch segment absorbency of a disposable
35 incontinence diaper is to be understood as a maximum amount of liquid that can be taken up by a test piece of defined dimensions, removed from the crotch region of the

disposable incontinence diaper, according to the measurement method described below.

This has the advantage that, in the crotch region, the
5 absorbent body of a disposable incontinence diaper of a
higher absorption strength in the thickness direction of
the disposable incontinence diaper is not much thicker
than the absorbent body of a disposable incontinence
diaper of a lower absorption strength, which has a
10 particularly advantageous effect on the wearing comfort.
The thickness direction runs orthogonal to the
longitudinal direction and transverse direction of the
disposable incontinence diaper here.

15 A first quotient Q_1 from the first total absorbency GSL_1
of the disposable incontinence diapers of the first
absorption strength to the first crotch segment
absorbency SL_1 of the disposable incontinence diapers of
the first absorption strength, calculated as: GSL_1/SL_1 ,
20 and a second quotient Q_2 from the second total absorbency
 GSL_2 of the disposable incontinence diapers of the second
absorption strength to the second crotch segment
absorbency SL_2 of the disposable incontinence diapers of
the second absorption strength, calculated as: GSL_2/SL_2 ,
25 are different from each other.

Further preferably, a ratio of a third crotch segment
absorbency SL_3 of the disposable incontinence diapers of
the third absorption strength to a fourth crotch segment
30 absorbency SL_4 of the disposable incontinence diapers of
the fourth absorption strength is 0.7-1.9, in particular
0.8-1.5, and a ratio of a third total absorbency GSL_3 of
the disposable incontinence diapers of the third
absorption strength to a fourth total absorbency GSL_4 of
35 the disposable incontinence diapers of the fourth
absorption strength is 1.0-2.5, in particular 1.0-2.0.

Further preferably, a third quotient $Q3$ from the third total absorbency $GSL3$ of the disposable incontinence diapers of the third absorption strength to the third crotch segment absorbency $SL3$ of the disposable incontinence diapers of the third absorption strength, calculated as: $GSL3/SL3$, and a fourth quotient $Q4$ from the fourth total absorbency $GSL4$ of the disposable incontinence diapers of the fourth absorption strength to the fourth crotch segment absorbency $SL4$ of the disposable incontinence diapers of the fourth absorption strength, calculated as: $GSL4/SL4$, are different from each other.

The rear side portions each have (at least) one component that is elastic in the transverse direction (hip circumferential direction) and that forms an elastic region. This allows the side portions to better adapt to the respective body shape and the movements of a user, and in particular the wearing comfort of the disposable incontinence diaper is enhanced.

In a preferred embodiment, the respective region of the rear side portions of the disposable incontinence diapers which is elastic in the transverse direction is formed by in each case an elastic component with a respective maximum extent QE in the transverse direction, wherein a ratio of a first maximum extent $QE1$ of the elastic component of the disposable incontinence diapers of the first absorption strength of the first size to a second maximum extent $QE2$ of the elastic component of the disposable incontinence diapers of the second absorption strength of the first size is 0.9-1.1, in particular 1.0.

Further preferably, a ratio of a third maximum extent $QE3$ of the elastic component of the disposable incontinence diapers of the third absorption strength of the second size to a fourth maximum extent $QE4$ of the elastic

component of the disposable incontinence diapers of the fourth absorption strength of the second size is 0.9-1.1, in particular 1.0.

- 5 In a preferred development, for the disposable incontinence diapers of the first and second size, it holds that a ratio of QE1 and/or QE2 to QE3 and/or QE4 is in each case 0.9-1.1, in particular 1.0.
- 10 A uniform maximum extent QE of the elastic component in disposable incontinence diapers of several and in particular of all sizes or absorption strengths makes it easier for the user to handle the disposable incontinence
15 diapers, since the elastic behavior of the side portions, such as the maximum stretch or the restoring force of the side portions when applying tensile forces while fixing the diaper to the body, is uniform within the arrangement. In the case where the user uses different
20 variants within the arrangement in different wearing situations, the similar handling of the disposable incontinence diapers is an advantage.

In a preferred embodiment, the elastic region of the disposable incontinence diapers of the first absorption
25 strength and of the disposable incontinence diapers of the second absorption strength has identical elastic properties, in particular being formed from the same material.

30 In a preferred development, the elastic region of the disposable incontinence diapers of the third absorption strength and of the disposable incontinence diapers of the fourth absorption strength has identical elastic
35 properties, in particular being formed from the same material.

Identical elastic properties are to be understood here in the state in which the disposable incontinence diapers are first taken in hand. If the identical nature of the elastic properties of the elastic regions of the disposable incontinence diapers is not apparent when they are first taken up, then the permanent set is determined by the method described below for checking whether a material is to be classed as "elastic". In the context of the present invention, the elastic properties are defined as being identical if the permanent set of the materials is the same.

By using material with identical elastic properties and/or the same maximum extent of the elastic region, it is advantageously achieved that the disposable incontinence diapers of different sizes and/or different absorption strength do not substantially differ in terms of the tensile forces that are to be applied by the user when putting on the disposable incontinence diaper.

The elastic components of the disposable incontinence diapers preferably comprise or consist of a flat material, in particular of a nonwoven fabric, a film, a textile material, a foam or combinations thereof. In particular, the elastic components comprise or consist of a laminate of two or more of said flat materials mentioned. More preferably, the elastic components can be made from a composite of elastic materials and non-elastic materials, in particular from a composite of an elastic film or an elastic nonwoven or an elastic foam or elastic threads such as lycra or spandex or elastane threads with a non-elastic and/or extensible nonwoven or foam.

In the case of a composite of elastic materials and non-elastic materials, the composite can be made available as an effective elastic component by the fact that the non-elastic material is designed to be extensible and,

in such a case, offers little or no resistance to the elastic extension of the elastic material. A further possibility is to connect the materials in the so-called stretch-bonding method known per se to a person skilled
5 in the art, namely to connect the elastic material in the pre-stretched state to the non-elastic material. A further possibility of achieving elastication of a composite of elastic materials and non-elastic materials is that the composite is "activated", preferably by a
10 technology that has become known as "ring rolling". This technology is described in EP 0 650 714 A1, for example. By means of "ring rolling", a composite material that is in itself inextensible, for example a nonwoven/film laminate, is overstretched by excess deflection between
15 intermeshing rollers. In this overstretched state, the laminate material, previously inextensible per se, offers basically no resistance to elongation. By combination with an elastically extensible material within such a laminate, an elastic extensibility can thus be achieved
20 in the region treated accordingly.

To test whether a material can be classed as "elastic" in the respective direction, the following test of the permanent set is to be carried out in the context of the
25 present invention:

The tests are carried out using a tensile testing machine of the type Shimadzu AG-Xplus, in accordance with DIN EN ISO 7500-01:2004-11, with a lower fixed clamping jaw and
30 an upper movable clamping jaw. The testing device preferably comprises software which controls the test cycle and which ensures automated recording of the force values.

35 When carrying out the test method, the rectangular material portion to be tested is ideally made available as a test specimen with a width of 25 mm and a length of

60 mm (the length corresponds to the direction of pulling). For this purpose, the test specimen is punched out, for example, from a corresponding elastic component of the disposable incontinence diaper, wherein the
5 direction of pulling of the test specimen corresponds to the transverse direction of the disposable incontinence diaper.

Ideally, the 25 mm wide and 60 mm long (pulling direction)
10 test specimen is clamped in the clamps of a tensile testing machine with a clamping jaw spacing of 40 mm, a prestressing of 0.05 N is applied, and a cyclical movement (loading and unloading, test speed 500 mm/min), without stopping time at the upper reversal point,
15 between L0 (length of the test section with prestressing of 0.05 N) and a maximum elongation of 60% is carried out. When the loading is removed, the end length L1 is likewise noted at 0.05 N.

The permanent set (PS) is calculated as follows:

20 $PS = ((L1-L0):L0) \times 100[\%]$.

A material is considered to be elastic in the respective direction if the permanent set is less than 25%.

If a 25 mm wide portion of the component to be tested is
25 not available, a correspondingly narrower portion is used. If a 60 mm long portion of the elastic component is not available, a correspondingly shorter portion is used, in which case the clamping jaw spacing, hence the effective length of the test portion, may have to be
30 reduced by up to 15 mm. It must be ensured that the portion is firmly clamped in the clamping jaws.

To test whether a material or a component is to be classed as "inextensible" in the respective direction, the
35 following test is to be carried out in the context of the present invention:

The tests are carried out using a tensile testing machine of the type Shimadzu AG-Xplus, in accordance with DIN EN ISO 7500-01:2004-11, with a lower fixed clamping jaw and an upper movable clamping jaw. The testing device
5 preferably comprises software which controls the test cycle and which ensures automated recording of the force values.

When carrying out the test method, the rectangular
10 material portion to be tested is ideally made available as a test specimen with a width of 25 mm and a length of 60 mm (the length corresponds to the direction of pulling). For this purpose, the test specimen is punched out, for example, from a corresponding component of the
15 disposable incontinence diaper, wherein the direction of pulling of the test specimen corresponds to the transverse direction of the disposable incontinence diaper.

20 Ideally, a 25 mm wide and 60 mm long (pulling direction) specimen of the material is clamped with prestressing of 0.05 N in the clamps of a tensile testing machine with a clamping jaw spacing of 40 mm, and the test specimen is stretched up to a force of 5 N (loaded, test speed 500
25 mm/min). If the elongation at the force of 5 N is less than 30%, the material is designated as inextensible in the context of the present invention. If, when carrying out the above test, the test specimen breaks before the maximum force of 5 N is reached, the material is likewise
30 classed as "inextensible" in the respective direction in the context of the present invention.

If a 25 mm wide portion of the component to be tested is not available, a correspondingly narrower portion is
35 used. In such a case, instead of the force of 5 N, the force value to be set is calculated by reducing the load of 5 N by the factor f_1 , which results from $f_1=25/x$,

where x is the width of the test specimen measured in mm.
Example: a test specimen with a width of 12.5 mm would
be subjected to a force of 2.5 N.

5 If a 60 mm long portion of the elastic component is not
available, a correspondingly shorter portion is used, in
which case the clamping jaw spacing, hence the effective
length of the test portion, may have to be reduced by up
to 15 mm. It must be ensured that the portion is firmly
clamped in the clamping jaws.

10

In a preferred embodiment, the respective region of the
rear side portions of the disposable incontinence diapers
which is elastic in the transverse direction is formed
by in each case an elastic component with a respective
15 maximum extent QE in the transverse direction, wherein a
ratio of the maximum extent QE of the elastic components
of the rear side portion to a maximum extent C of the
rear side portion of the disposable incontinence diapers
in the longitudinal direction selected from at least two,
20 in particular at least three, in particular all of the
group of disposable incontinence diapers of the first
absorption strength, disposable incontinence diapers of
the second absorption strength, disposable incontinence
diapers of the third absorption strength, disposable
25 incontinence diapers of the fourth absorption strength,
is in each case 0.3-0.7, in particular 0.4-0.6, more
particularly 0.45-0.55, preferably 0.50.

Further preferably, a ratio of the respective maximum
30 extent C of the rear side portion of the disposable
incontinence diapers of the first size to the respective
maximum extent C of the rear side portion of the
disposable incontinence diapers of the second size and
in particular also to the disposable incontinence diapers
35 of the third size is 0.9-1.1, in particular 1.0.

On account of the only partially elastic design of the (rear) side portions, it is achieved that the (rear) side portions, in the transverse direction, also comprise at least one, in particular two non-elastic and/or non-
5 extensible regions in addition to an elastic region, such that preferably the proximal portion of the side portion at least partially - in particular at least a sub-portion of the proximal portion provided for joining the rear side portion to the main part - and/or the free-ending
10 distal portion at least partially - in particular a sub-portion of the free-ending distal portion provided for joining closure means and/or adjoining the free end of the side portion in the transverse direction of the disposable incontinence diaper - is non-elastic and/or
15 inextensible. The joining of the (rear) side portion to the main part and/or the joining of closure means to the (rear) side portion is advantageously made easier.

In particular, the rear side portions each have at least
20 one closure means in the region of their end that is free in the transverse direction, more particularly precisely one closure means.

The closure means are typically a flap which is made of
25 a single-layer or multi-layer flat material and which, starting from a configuration generally folded inward onto the rear side portion about a distal longitudinal edge at the free end of the rear side portion in question, can be unfolded into an outwardly deployed operational
30 position. Alternatively, it is conceivable that the rear side portion has a functional closure means (patch) within the free-ending distal portion of the rear side portion. In a manner known per se and therefore not described in any more detail, a respective closure means
35 is equipped with adhesive and/or mechanically adhering regions, layers or elements, such as hook-and-loop materials. If the rear side portions each have exactly

one closure means, it proves advantageous if this closure means is provided approximately centrally in the longitudinal direction of the rear side portion and in the free-ending distal portion of the rear side portion.

5 It further proves advantageous if the closure means in question has an extent in the longitudinal direction of between 25% and 75% of the extent C of the rear side portion in the longitudinal direction. Moreover, the respective closure means are preferably rectangular in
10 shape when folded in and folded out. In the non-active configuration at the time of manufacture, they are preferably folded inward onto themselves.

In the use situation, the rear side portions are brought to overlap a side that is facing away from the body, i.e.
15 an outer side of the front region of the main part, such that the closure means provided on both rear side portions, in the region of a respective free end of the rear side portion in the diaper transverse direction, can be closed onto the outer side of the front region of the
20 main part. For this purpose, the closure means and at least one region of the outer side of the front region of the main part are designed as a closure system. In particular, the closure means for this purpose have mechanical components such as Velcro hooks, in particular
25 also in combination with pressure-sensitive adhesive regions, by which the closure means can be brought into releasable, secure engagement with the outer side of the front region of the main part. For this purpose, it has proven advantageous if the outer side of the front region
30 of the main part is formed at least partially, preferably completely, by a suitably formed nonwoven. Alternatively, it is possible to provide one or more separate Velcro elements on the outer side of the main part in the front region, which elements serve as a landing zone for the
35 closure means of the rear side portions.

In a preferred embodiment, the disposable incontinence
diapers of the first size and/or the disposable
incontinence diapers of the second size and/or the
disposable incontinence diapers of the third size and/or
5 the disposable incontinence diapers of the fourth size
are designed in such a way that, in the state when placed
on a user, a respective elastic region at least partially
bridges a gap P between a front lateral longitudinal edge
of the front region and a rear lateral longitudinal edge
10 of the back region.

The respective elastic region lies against the skin of
the user and in particular does not overlap the front
region of the main part (chassis material). This is
15 advantageous in that the elastic region can freely follow
and act on the movements of the user without rubbing on
the material of the main part, in particular without
gathering the material of the main part, and therefore
the wearing comfort is maintained.

20

In a further preferred embodiment, the rear side portions
in the transverse direction comprise a proximal portion
adjoining the rear lateral longitudinal edge and a free-
ending distal portion adjoining the proximal portion,
25 a) wherein the proximal portion extends in the
transverse direction, starting from the rear lateral
longitudinal edge, by a length that measures 65% of
the extent of a rear side portion in the transverse
direction,
30 b) wherein the component of the rear side portions
which is elastic in the transverse direction is
arranged at least partially, in particular
completely within the proximal portion,
c) wherein the respective rear side portions are
35 substantially inextensible in the transverse
direction at least in part, in particular in the
entire distal portion.

This preferred embodiment advantageously has the effect that at least the free-ending distal portion, in particular at least a grip region within the distal
5 portion, is designed to be inextensible and can thus be grasped securely by the user.

Preferably, a ratio of the maximum span MS of the disposable incontinence diapers (i.e. of all the
10 incontinence diapers of the arrangement) to a front span VS of the disposable incontinence diapers is 1.3-2.8, in particular 1.4-2.7, more particularly 1.5-2.6, more particularly 1.6-2.5.

15 Preferably, no side portions are joined to the front region of the main part. In such a case, the front span corresponds to the front main-part width.

The front span is to be understood as the maximum
20 transverse extent, measured in mm, of the disposable incontinence diaper in the state when unfolded and spread out flat but not stretched, in particular in the front region of the main part of the disposable incontinence diaper.

25 The chassis of the disposable incontinence diaper is preferably designed to be inextensible, in order to counteract any slipping of the liquid-absorbing regions (absorbent body) when the disposable incontinence diaper
30 is being worn. In particular, a topsheet and/or a backsheet is formed from inextensible flat materials.

Sub-portions of the side portions, in particular a sub-
35 portion of the proximal portion provided for joining the rear side portion to the main part, a so-called joining region, more particularly a so-called closure carrier region provided for joining closure means, and/or a sub-

portion of the free-ending distal portion adjoining that end of the side portion free in the transverse direction of the disposable incontinence diaper, a so-called grip region, are preferably made of inextensible material, in particular of inextensible flat material, in order to simplify the production of stable joins between rear side portions and the main part and/or closure means and/or to facilitate gripping of the rear side portion while the disposable incontinence diaper is being put on by the user.

According to a preferred embodiment, said inextensible sub-portions of the rear side portions, hence the joining region and/or the closure carrier region and/or the grip region, comprise or consist of the same material, in particular the same flat material, more particularly the same nonwoven material.

The inextensible flat materials of the chassis and of the rear side portions preferably comprise or consist of a nonwoven material, such as spunbond nonwoven, meltblown nonwoven, carded nonwoven, spunlace nonwoven or through-air bonded carded nonwoven, or combinations thereof. Of particular preference are spunbond nonwoven materials and/or meltblown nonwoven materials, in particular laminates of spunbond (S) and meltblown (M) nonwovens or fleece layers such as SMS or SSMS or SMMS or SSMS or SSMMSS laminates.

It has moreover proven advantageous if the nonwoven material contains at least one formulation component based on a thermoplastic polymer, such as polyethylene PE, polypropylene PP or polyethylene terephthalate PET or mixtures thereof.

Nonwoven materials including rayon, cellulose, polyamide PA and mixtures thereof are also conceivable.

The nonwoven material advantageously has a basis weight of 10-70 g/m², more preferably of 20-60 g/m², more preferably of 30-50 g/m².

The absorbent body is suitable and intended for absorbing and permanently storing bodily excretions, in particular bodily fluids, in particular urine. For this purpose, the absorbent body can advantageously contain superabsorbent polymer material (SAP), in particular from 5 to 100 percent by weight, preferably from 10 to 95 percent by weight, more preferably from 15 to 90 percent by weight, very particularly preferably from 20 to 80 percent by weight. Typically, the SAP material can absorb at least 15 times and in particular 20 times its weight of 0.9% by weight saline solution (measured according to NWSP 242.0.R2(15)).

The SAP material can be particulate or fibrous or sheet-like or foam-like, for example.

The absorbent body can contain other materials such as cellulose fibers (wood pulp) or plastic fibers. It is also conceivable to design the absorbent body by arrangement of one or more layers of different material, in particular of nonwoven.

The absorbent body is preferably an integral constituent of the main part and, in such a case, is connected non-releasably to the other components of the main part at the time of manufacture. In such a case, the absorbent body is preferably connected non-releasably to a topsheet and/or to a backsheet of the main part.

The main part of the disposable incontinence diaper preferably comprises an at least partially liquid-permeable topsheet and a preferably breathable and preferably at least partially liquid-impermeable backsheet, which further preferably sandwich the absorbent body between them.

Furthermore, on the side of the crotch region facing toward the body, the disposable incontinence diaper can have cuff elements which form a lateral outlet barrier on both sides and/or which run on both sides along a longitudinal extent of the absorbent body. The cuff elements preferably comprise or are formed from a nonwoven material ("cuff fleece"), in particular a hydrophobic nonwoven material.

The topsheet and/or backsheet and/or cuff fleece preferably extend at least in the transverse direction of the disposable incontinence diaper, preferably also in the longitudinal direction, beyond the contour edges of the absorbent body, in order to form a corresponding overhang. In the overhang, the backsheet and topsheet and/or cuff fleece are preferably connected to one another at least in part, in particular by joining methods known per se, such as welding, sealing, sewing or gluing.

In an advantageous manner, the main part has in the crotch region, adjoining a respective longitudinal edge of the crotch region on both sides, an elastic or elasticated portion extending in the longitudinal direction of the disposable incontinence diaper, namely an elastic or elasticated leg opening portion. Here, "in the longitudinal direction of the disposable incontinence diaper" means that the elastic or elasticated leg opening portion has at least one component in the longitudinal direction of the disposable incontinence diaper, hence can also run obliquely or in a curve with respect to the longitudinal direction of the disposable incontinence diaper.

For this purpose, elastic threads (Lycra® or the like) known per se to a person skilled in the art are preferably fixed in a prestressed state to materials forming the main part, preferably to the topsheet and/or backsheet of the main part, in particular in a region in which the

topsheet and/or backsheet and/or cuff fleece form an overhang outside the contour edges of the absorbent body. According to one variant, an elastic or elasticated leg opening portion can also be formed by flat materials or
5 band-shaped materials such as elastic bands, films, nonwovens or foams.

Disposable incontinence diapers of different absorption strength are required in order to meet different use
10 situations (e.g. day or night) and/or user groups with different needs. The absorption strength of a disposable incontinence diaper is directly related to the total absorbency of the respective absorption body and in each case comprises a defined bandwidth of the total
15 absorbency, in such a way that the smallest possible number of different absorption strengths is sufficient to suit as far as possible all use situations and/or users.

20 The total absorbency of the absorbent body is determined according to a maximum amount of urine substitute liquid that can be taken up by the entire absorbent body and is measured in grams [g] as described below, according to ISO11948-1 (1996).

25

Test method for determining the total absorbency and the crotch segment absorbency

To determine the crotch segment absorbency and the total absorbency of the disposable incontinence diapers, the
30 products are measured in a manner known per se to a person skilled in the art, according to ISO 11984-1 (1996), but with the difference as explained below.

To be able to determine both the crotch absorbency and the total absorbency of a disposable incontinence diaper,
35 the disposable incontinence diaper, in the state when folded open and spread out flat, is first divided into three test pieces arranged in the longitudinal direction

of the disposable incontinence diaper, namely a front test piece, a rear test piece, and, lying between these, a central test piece of the disposable incontinence diaper. For this purpose, the respective disposable incontinence diaper, in the state when folded open and spread out flat, is fixed on a support, and a test piece extending by 200 mm in the longitudinal direction of the disposable incontinence diaper, extending in the transverse direction as far as the lateral longitudinal edges of the disposable incontinence diaper, and centered in the longitudinal direction of the disposable incontinence diaper, is punched out through the entire thickness of the disposable incontinence diaper or cut out with sharp scissors. The punching or cutting is carried out along substantially straight separation axes. The separation axes run in the transverse direction of the disposable incontinence diaper from one lateral longitudinal edge to the opposite lateral longitudinal edge of the disposable incontinence diaper.

The center of the removal position of the central test piece is determined by the point of intersection of the longitudinal central axis with the transverse central axis of the disposable incontinence diaper.

If the disposable incontinence diaper has elastic or elasticated cuff elements forming lateral outlet barriers and/or running on both sides along a longitudinal extent of the absorbent body and/or has an elastic or elasticated leg opening portion, these are deactivated before the disposable incontinence diaper is spread out, in particular by cutting the respective elastic or elasticated elements.

The test pieces produced are measured separately. For this purpose, the respective test piece is weighed according to ISO 11948-1 (1996) in the dry state (dry weight in g), and, in the state when spread out flat with the liquid-absorbing upper side facing downward, is

placed in a test solution (9.0 g/l NaCl in distilled water), drained off, and then weighed in the wet state (wet weight in g).

5 Subtracting the dry weight [g] from the wet weight [g] of a test piece yields a segment absorbency of the test piece [g].

The segment absorbency of the central test piece in the crotch region of a disposable incontinence diaper, that
10 is to say of the test piece arranged in the disposable incontinence diaper between the rear and the front test piece, corresponds to the crotch segment absorbency [g] of the disposable incontinence diaper.

The sum of the segment absorbency levels of the three
15 test pieces of a disposable incontinence diaper yields the total absorbency [g] of the disposable incontinence diaper.

Further features, details and advantages of the invention
20 will become clear from the accompanying claims and from the drawing and the following description of preferred embodiments of the invention. The drawing shows as follows:

25 **Drawings**

Figure 1

a schematic plan view, not to scale, of a disposable incontinence diaper in the state when unfolded and spread
30 out flat

Figure 2

a schematic plan view, not to scale, of a disposable incontinence diaper in the state when unfolded and spread
35 out flat, with transverse central axis, longitudinal central axis and removal positions of test pieces for determining absorbency levels

Figure 3

a schematic sectional view, not to scale, of a disposable incontinence diaper according to Figure 1 in the region of a side portion that has been unfolded and spread out flat but not stretched

Figure 4

a schematic side view, not to scale, of a disposable incontinence diaper in the applied state

Figure 5

a schematic plan view, not to scale, of a disposable incontinence diaper in the state when unfolded and spread out flat

Figure 6a

a schematic sectional view, not to scale, of the disposable incontinence diaper of Figure 5

Figure 6b

a schematic sectional view, not to scale, of a disposable incontinence diaper with a first fold arrangement

Figure 6c

a schematic sectional view, not to scale, of a disposable incontinence diaper with a second fold arrangement

Figure 6d

a schematic sectional view, not to scale, of a disposable incontinence diaper with a third fold arrangement.

Figures 1, 2 and 3 show (not to scale, but schematically) an example of a disposable incontinence diaper 100, 101, 200, 201 for taking up bodily excretions. The disposable incontinence diaper 100, 101, 200, 201 has a longitudinal direction 8 and a transverse direction 10 and comprises

an absorbent body 6 and a main part 4 comprising a front region 12 with front lateral longitudinal edges 14 and a back region 16 with rear lateral longitudinal edges 18, and, arranged between these, a crotch region 17 that comes to lie between the legs of a user, and with rear side portions 22 which are joined to the back region 16 on both sides and which extend in the transverse direction 10 beyond the lateral rear longitudinal edges 18 of the main part 4, and wherein the rear side portions 22 have an elastic region 42 in the transverse direction 10, wherein the rear side portions 22, in the region of their free end 41 in the transverse direction 10, each have at least one closure means 28.

The rear side portions 22 are joined to the main body 4 with overlapping, wherein the rear side portions 22 within the overlap regions 36 are preferably connected to the main part 4 by ultrasonic welding. However, any other joining method known per se to a person skilled in the art and suitable for the purpose, in particular thermal welding, sewing, sealing or gluing, is also possible.

In Figures 1, 2, 3 and 4, the rear side portions 22 are positioned such that they are joined to the main part 4 at a spacing in the longitudinal direction 8 from a rear transverse edge 33 of the disposable incontinence diaper. However, a design is also conceivable without a spacing in the longitudinal direction 8 between the rear transverse edge 33 of the disposable incontinence diaper and the rear side portions 22.

As is shown in Figure 1 (not to scale, but schematically), the disposable incontinence diaper 100, 101, 200, 201 extends by a length L in the longitudinal direction 8. The length L of a disposable incontinence diaper is its maximum longitudinal extent from a rear transverse edge 33 of the disposable incontinence diaper to a front transverse edge 34 of the disposable incontinence diaper.

The length L of disposable incontinence diapers of a first size 100, 101 is designated as L1. The length L of disposable incontinence diapers of a second size 200, 201 is designated as L2.

5 In the transverse direction 10, the disposable incontinence diaper 100, 101, 200, 201 extends over a maximum span MS. The maximum span MS is a maximum transverse extent of the disposable incontinence diaper in the back region 16 of the disposable incontinence
10 diaper, i.e. in the region of the rear side portions 22. The maximum span MS of disposable incontinence diapers of a first size 100, 101 is designated as MS1. The maximum span MS of disposable incontinence diapers of a second size 200, 201 is designated as MS2. The dimensions of
15 disposable incontinence diapers of an exemplary arrangement are summarized in Table 1 below. From the values listed there, it will be seen that the length L1 and the maximum span MS1 of the disposable incontinence diapers of the first size are substantially the same,
20 regardless of whether it is a disposable incontinence diaper of the first absorption strength 100 or of the second absorption strength 101. Similarly, the length L2 and the maximum span MS2 of the disposable incontinence diapers of the second size are substantially the same,
25 regardless of whether it is a disposable incontinence diaper of the third absorption strength 200 or of the fourth absorption strength 201.

The length L1 of the first size is greater than the length L2 of the second size, and the maximum span MS1 of the
30 first size is greater than the maximum span MS2 of the second size.

Furthermore, the disposable incontinence diaper 100, 101, 200, 201 has, in the transverse direction 10, a rear
35 main-part width CHB and a rear side-portion width EARB. The rear main-part width CHB of a disposable incontinence diaper is a maximum transverse extent of the main part 4

in the back region 16, i.e. from a rear lateral longitudinal edge 18 to the opposite rear lateral longitudinal edge 18 in the transverse direction 10 of the disposable incontinence diaper.

5 The rear side-portion width EARB of a disposable incontinence diaper is a maximum extent of a rear side portion 22 in the transverse direction 10 of the disposable incontinence diaper, i.e. in a hip circumferential direction, beyond the respective rear
10 lateral longitudinal edge 18 of the main part.

The rear side portions 22 of the illustrated disposable incontinence diaper have substantially the same side-portion width EARB.

The sum of the rear side-portion widths EARB and of the
15 rear main-part width CHB give the maximum span MS.

An exemplary arrangement comprises disposable incontinence diapers of different sizes. An exemplary sub-arrangement comprises disposable incontinence
20 diapers of substantially the same size, in particular of substantially the same length L and substantially the same maximum span MS, but which differ from each other in terms of the absorption strength.

In an exemplary sub-arrangement of disposable
25 incontinence diapers of one size but of different absorption strength, the rear main-part width CHB and the rear side-portion width EARB of disposable incontinence diapers of different absorption strengths - despite the same maximum span - are not of the same size but different
30 in terms of their transverse extent.

The rear main-part width CHB of disposable incontinence diapers of a first absorption strength 100 of a first size is designated as CHB1. The rear main-part width CHB of disposable incontinence diapers of a second absorption
35 strength 101 of a first size is designated as CHB2. The rear main-part width CHB of disposable incontinence diapers of a third absorption strength 200 of a second

size is designated as CHB3. The rear main-part width CHB of disposable incontinence diapers of a fourth absorption strength 201 of a second size is designated as CHB4.

5 The rear side-portion width EARB of disposable incontinence diapers of a first absorption strength 100 of a first size is designated as EARB1. The rear side-portion width EARB of disposable incontinence diapers of a second absorption strength 101 of a first size is designated as EARB2. The rear side-portion width EARB of disposable incontinence
10 diapers of a third absorption strength 200 of a second size is designated as EARB3. The rear side-portion width EARB of disposable incontinence diapers of a fourth absorption strength 201 of a second size is designated as EARB4.

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In the example of an arrangement shown in Table 1 below, CHB1 is greater than CHB2 and EARB1 is smaller than EARB2 in the case of disposable incontinence diapers of the first size, although the respective maximum span MS1 is
20 the same for both absorption strengths. In the same way, in the case of disposable incontinence diapers of the second size, CHB3 is greater than CHB4 and EARB3 is smaller than EARB4, with the same maximum span MS2 of the two absorption strengths. It will be seen from this that
25 a different absorption strength within a size is associated with a different main-part width CHB and a different side-portion width EARB, but not with a different maximum span MS.

30 Furthermore, the disposable incontinence diaper illustrated in Figure 1 has a front span VS, which extends from a front lateral longitudinal edge 14 in the transverse direction 10 of the disposable incontinence diaper to the opposite lateral longitudinal edge 14. The
35 front span VS is the maximum transverse extent of the disposable incontinence diaper in the front region 12 of the main part 4. In this case, no side portions are joined

in the front region 12 of the disposable incontinence diaper. The front span VS here corresponds to the front main-part width.

5 An embodiment with front side portions joined on both sides to the front lateral longitudinal edges 14 of the front region 12 is also conceivable. In such a case, the front span VS extends from an end of a front side portion, free in the transverse direction of the disposable
10 incontinence diaper, to the free end of a respective other front side portion.

The disposable incontinence diaper preferably has a significantly smaller front span VS compared to the
15 maximum span MS (in the back region). Therefore, disposable incontinence diapers of this kind are often referred to as T-shape diapers.

The front span VS of disposable incontinence diapers of
20 a first absorption strength 100 of a first size is designated as VS1. The front span VS of disposable incontinence diapers of a second absorption strength 101 of a second size is designated as VS2. The front span VS of disposable incontinence diapers of a third absorption
25 strength 200 of a second size is designated as VS3. The front span VS of disposable incontinence diapers of a fourth absorption strength 201 of a second size is designated as VS4.

30 A ratio of the maximum span MS of the disposable incontinence diapers to the front span VS of the disposable incontinence diapers is advantageously 1.3-2.8, in particular 1.4-2.7, more particularly 1.5-2.6, more particularly 1.6-2.5.

35 In the arrangement shown in Table 1 below, a ratio of the maximum span MS1 to the front span VS1 of the first absorption strength of the first size is 1.98, and a

ratio of the maximum span MS1 to the front span VS2 of the second absorption strength of the first size is 2.16. Furthermore, in this example, a ratio of the maximum span MS2 to the front span VS3 of the third absorption strength of the second size is 1.76, and a ratio of the maximum span MS2 to the front span VS4 of the fourth absorption strength of the second size is 2.39.

In the example set out in Figure 1 and in Table 1 below, the rear main-part width CHB and the front main-part width extend by substantially the same width. However, a variant is also conceivable in which the rear CHB and the front main-part width are different from each other.

The rear main-part width CHB, together with the side-portion widths EARB of the two rear side portions and with the front span VS together, gives the hip circumference width HUB of the disposable incontinence diaper.

The hip circumference width HUB of disposable incontinence diapers of a first absorption strength 100 of a first size is designated as HUB1. The hip circumference width HUB of disposable incontinence diapers of a second absorption strength 101 of a first size is designated as HUB2. The hip circumference width HUB of disposable incontinence diapers of a third absorption strength 200 of a second size is designated as HUB3. The hip circumference width HUB of disposable incontinence diapers of a fourth absorption strength 201 of a second size is designated as HUB4.

In the arrangement shown in Table 1 below, the hip circumference widths HUB1 and HUB2 of the disposable incontinence diapers of the first size are each larger than each of the hip circumference widths HUB3 and HUB4 of the disposable incontinence diapers of the second size.

The hip circumference width HUB1 of the disposable incontinence diapers of the first absorption strength of the first size and the hip circumference width HUB2 of the disposable incontinence diaper of the second absorption strength of the first size differ only slightly from each other. Similarly, the hip circumference width HUB3 of the disposable incontinence diapers of the third absorption strength of the second size and the hip circumference width HUB4 of the disposable incontinence diaper of the fourth absorption strength of the second size differ only slightly from each other.

The absorbent body 6 of the disposable incontinence diapers has a maximum transverse extent QR in the back region 16 and a minimum transverse extent QS in the crotch region 17.

The maximum transverse extent QR of the absorbent body 6 in the back region 16 and/or the minimum transverse extent QS of the absorbent body 6 in the crotch region 17 each run in the transverse direction 10 of the disposable incontinence diaper, i.e. orthogonal to a longitudinal central axis LA (shown not to scale, but schematically in Figure 2) of the respective disposable incontinence diaper. The maximum transverse extent QR of the absorbent body 6 in the back region 16 is to be measured at a widest point (in the transverse direction 10 of the disposable incontinence diaper) of a subportion of the absorbent body 6 within a rear product half 19, i.e. between the rear transverse edge 33 of the disposable incontinence diaper and a transverse central axis QA of the disposable incontinence diaper.

The minimum transverse extent QS of the absorbent body 6 is to be measured at a narrowest point of the absorbent body 6 within the crotch region 17. If no narrowest point of the crotch region 17 in the sense of a genuine minimum is present, as in the case of at least partially straight

longitudinal edges of the absorbent body that run parallel to the longitudinal direction 8, then the measurement is carried out along and at the level of the transverse central axis QA (shown not to scale, but schematically in Figure 2) of the disposable incontinence 5 diaper.

The maximum transverse extent QR of the absorbent body 6 of disposable incontinence diapers of a first absorption strength 100 of a first size is designated as QR1. The 10 maximum transverse extent QR of the absorbent body 6 of disposable incontinence diapers of a second absorption strength 101 of a first size is designated as QR2. The maximum transverse extent QR of the absorbent body 6 of disposable incontinence diapers of a third absorption 15 strength 200 of a second size is designated as QR3. The maximum transverse extent QR of the absorbent body 6 of disposable incontinence diapers of a fourth absorption strength 201 of a second size is designated as QR4.

The minimum transverse extent QS of the absorbent body 6 of disposable incontinence diapers of a first absorption 20 strength 100 of a first size is designated as QS1. The minimum transverse extent QS of the absorbent body 6 of disposable incontinence diapers of a second absorption strength 101 of a first size is designated as QS2. The 25 minimum transverse extent QS of the absorbent body 6 of disposable incontinence diapers of a third absorption strength 200 of a second size is designated as QS3. The minimum transverse extent QS of the absorbent body 6 of disposable incontinence diapers of a fourth absorption 30 strength 201 of a second size is designated as QS4.

In the arrangement shown as an example in Table 1 below, a quotient $QR1/QS1$ of a disposable incontinence diaper of the first absorption strength of the first size is 2.7 35 and a quotient $QR2/QS2$ of a disposable incontinence diaper of the second absorption strength of the first size is 1.6. $QR1/QS1$ is therefore greater than $QR2/QS2$.

This results in a stronger waisting of the absorbent body 6 of the disposable incontinence diapers of the first absorption strength 100 of the first size compared to disposable incontinence diapers of the second absorption strength 101 of the first size.

Furthermore, a quotient $QR3/QS3$ of a disposable incontinence diaper of the third absorption strength of the second size is 2.3 and a quotient $QR4/QS4$ of a disposable incontinence diaper of the fourth absorption strength of the second size is 1.4. $QR3/QS3$ is therefore greater than $QR4/QS4$. This results in a stronger waisting of the absorbent body 6 of the disposable incontinence diapers of the third absorption strength 200 of the second size compared to disposable incontinence diapers of the fourth absorption strength 201 of the second size.

As will further be seen from Figure 1, the main part comprises an at least partially liquid-permeable topsheet 24 and a breathable and at least partially liquid-impermeable backsheet 26, which sandwich the absorbent body 6 between them.

Furthermore, the main part 4 has, in the crotch region 17, an elastic or elasticated leg opening portion 30 adjoining on both sides a respective longitudinal edge 20 of the crotch region 17 and extending in the longitudinal direction 8 of the disposable incontinence diaper 100, 101, 200, 201. In this example, the elastic or elasticated leg opening portion 30 has two elastic threads 31 in the longitudinal direction 8 of the disposable incontinence diaper 100, 101, 200, 201, which threads run in a curve with respect to the longitudinal direction 8 of the disposable incontinence diaper.

Figure 2 shows (not to scale, but schematically) a division of a disposable incontinence diaper into three test pieces P1, P2, P3 for determining a crotch segment absorbency SL and a total absorbency GSL in the state of

the disposable incontinence diaper when unfolded and spread out flat. The disposable incontinence diaper is separated along two separation axes into three test pieces P1, P2, P3 which are arranged in the longitudinal direction 8 of the disposable incontinence diaper, namely a rear test piece P1, a front test piece P3 and, lying between these, a central test piece P2 of the disposable incontinence diaper.

An intersection point K of the longitudinal central axis LA with the transverse central axis QA of the disposable incontinence diaper determines the center of the removal position of the central test piece P2. The central test piece P2 extends by 200 mm in the longitudinal direction and comprises a rear sub-portion P2.1, which is located in the rear product half 19 and, starting from the transverse central axis QA, extends 100 mm in the longitudinal direction 8 toward the back region 16, and a front sub-portion P2.2, which is located in the front product half 21 and, starting from the transverse central axis QA, extends 100 mm in the longitudinal direction 8 toward the front region 12. In the transverse direction 10, the test pieces extend on both sides as far as the lateral longitudinal edges of the disposable incontinence diaper. The separation axes run substantially in a straight line orthogonal to the longitudinal central axis LA and parallel to the transverse central axis QA. The separation takes place through the entire thickness of the disposable incontinence diaper by means of methods known per se to a person skilled in the art, for example punching or cutting.

As has been described above, the rear test piece P1, the central test piece P2 and the front test piece P3 are subjected, separately from each other, to a test for determining a respective segment absorbency of the test piece. The segment absorbency of the central test piece P2 corresponds to the crotch segment absorbency SL. The total absorbency GSL of the disposable incontinence

diaper is obtained by adding the respective segment absorbency of the rear test piece P1, the central test piece P2 and the front test piece P3.

The crotch segment absorbency SL of disposable incontinence diapers of a first absorption strength 100 of a first size is designated as SL1. The crotch segment absorbency SL of disposable incontinence diapers of a second absorption strength 101 of a first size is designated as SL2. The crotch segment absorbency SL of disposable incontinence diapers of a third absorption strength 200 of a second size is designated as SL3. The crotch segment absorbency SL of disposable incontinence diapers of a fourth absorption strength 201 of a second size is designated as SL4.

The total absorbency GSL of disposable incontinence diapers of a first absorption strength 100 of a first size is designated as GSL1. The total absorbency GSL of disposable incontinence diapers of a second absorption strength 101 of a first size is designated as GSL2. The total absorbency GSL of disposable incontinence diapers of a third absorption strength 200 of a second size is designated as GSL3. The total absorbency GSL of disposable incontinence diapers of a fourth absorption strength 201 of a second size is designated as GSL4.

In the example of an arrangement of disposable incontinence diapers shown in Table 1 below, a ratio $SL1/SL2$ is 0.86, and a ratio $GSL1/GSL2$ is 1.14. The ratio $SL1/SL2$ is therefore smaller than the ratio $GSL1/GSL2$. Similarly, a ratio $SL3/SL4$ of 0.93 is less than a ratio $GSL3/GSL4$ of 1.13. When comparing two disposable incontinence diapers of one size, the total absorbency GSL in the disposable incontinence diaper of the greater absorption strength 100, 200 is thus greater than in the disposable incontinence diaper of the lower absorption strength 101, 201, whereas the crotch segment absorbency SL in the disposable incontinence diaper of the higher

absorption strength 100, 200 is not greater, and in this example is even smaller, than in the disposable incontinence diaper of the lower absorption strength 101, 201. This has the advantage that, even with a high absorption strength, for example in a disposable incontinence diaper for use during the night, the absorbent body 6 in the crotch region 17 does not build up very much and therefore does not have an unfavorable effect on the wearing comfort.

10

In the arrangement shown in Table 1, a quotient Q1 of the first absorption strength of the first size calculated as: $GSL1/SL1$ of 4.78 is different from a quotient Q2 of the second absorption strength of the first size calculated as: $GSL2/SL2$ of 3.61. Similarly, a quotient Q3 of the third absorption strength of the second size calculated as: $GSL3/SL3$ of 3.71 is different from a quotient Q4 of the fourth absorption strength of the second size calculated as: $GSL4/SL4$ of 3.07. In particular, Q1 is greater than Q2 and/or Q3 is greater than Q4. This has the advantage that the total absorbency GSL of a disposable incontinence diaper of the respectively greater absorption strength 100, 200 of one size, compared to the total absorbency GSL of a disposable incontinence diaper of the respectively lower absorption strength 101, 201 of the respective size, increases more than the respective crotch absorbency SL. This in turn has the advantageous effect that, even with a high absorption strength, for example in a disposable incontinence diaper for use during the night, the absorbent body 6 in the crotch region 17 does not build up very much and therefore does not have an unfavorable effect on the wearing comfort.

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Figure 3 shows (not to scale, but schematically) an enlarged detail of the disposable incontinence diaper 1 according to Figure 1, specifically in the region of a

rear side portion 22 in the state when unfolded and spread out flat, but not stretched. The rear side portion 22 is joined in the back region 16 of the disposable incontinence diaper to a rear lateral longitudinal edge 18 of the main part 4 and, preferably in the region of its free end 41 in the transverse direction 10, has at least one closure means 28, in particular exactly one closure means 28. Furthermore, the rear side portion has a region 42 which is elastic in the transverse direction 10 and which is formed by preferably an elastic component with a maximum extent QE in the transverse direction 10. The maximum extent QE of disposable incontinence diapers of a first absorption strength 100 of a first size is designated as QE1. The maximum extent QE of disposable incontinence diapers of a second absorption strength 101 of a first size is designated as QE2. The maximum extent QE of disposable incontinence diapers of a third absorption strength 200 of a second size is designated as QE3. The maximum extent QE of disposable incontinence diapers of a fourth absorption strength 201 of a second size is designated as QE4.

The illustration in Figure 3 is to be understood in particular in the sense that a rear side portion not shown, which is joined to another and in the transverse direction 10 opposite rear lateral longitudinal edge of the main part 4, is substantially identical, hence of mirror-symmetrical design to the rear side portion shown.

The elastic region 42 of the disposable incontinence diapers of the first absorption strength and of the second absorption strength and/or of the third absorption strength and/or of the fourth absorption strength has in each case the same elastic properties and is formed in particular from the same material.

In the transverse direction 10, the rear side portion 22 comprises a proximal portion 38 adjoining the rear

lateral longitudinal edge 18, and a free-ending distal portion 40 adjoining the proximal portion 38. Starting from the rear lateral longitudinal edge 18, the proximal portion 38 extends in the transverse direction 10 by a length that is 65% of the extent 44 of the rear side portion 22 in the transverse direction 10. The component of the rear side portion 22 that is elastic in the transverse direction 10 is arranged at least partially, in particular completely, within the proximal portion 38.

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The rear side portion 22 is substantially inextensible in the transverse direction 10 at least partially, in particular within the entire distal portion 40.

15 The rear side portion 22 has a maximum extent C in the longitudinal direction 8. The maximum extent C is preferably substantially the same across all sizes and absorption strengths.

A ratio of a first maximum extent QE1 of the elastic component of the disposable incontinence diapers of the first absorption strength 100 of the first size and of a second maximum extent QE2 of the elastic component of the disposable incontinence diaper of the second absorption strength 101 of the first size is 1.0 in the arrangement shown in Table 1 below.

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In the arrangement shown in Table 1 below, a preferred ratio of the maximum extent QE of the elastic component of the rear side portion 22 to the maximum extent C of the rear side portion 22 is 0.50.

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Figure 4 shows (not to scale, but schematically) a side view of the disposable incontinence diaper in the state when fitted on a user. For fitting and closing the disposable incontinence diaper on the user, the rear side portions 22 are each placed in a circumferential direction around the body of the user and are brought into an overlapping arrangement with an outer side of the

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front region 12, on which they can each be releasably affixed via the respective closure means 28.

The disposable incontinence diaper is preferably designed in such a way that, in the state when placed on a user, the respective elastic region 42 of the rear side portion 22 at least partially bridges a gap P between a front lateral longitudinal edge 14, i.e. a side edge of the front region 12, and a rear lateral longitudinal edge 18, i.e. a side edge of the back region 16. The elastic region 42 preferably lies on the skin of the user and in particular is not covered by a material of the front region 12 of the main part 4.

Table 1 below shows an arrangement of disposable incontinence diapers of a first absorption strength 100 and second absorption strength 101 of a first sub-arrangement of a first size and of a third absorption strength 200 and fourth absorption strength 201 of a second sub-arrangement of a second size.

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Table 1: Example of dimensions of disposable incontinence diapers of an arrangement comprising disposable incontinence diapers of a first size 100, 101 and disposable incontinence diapers of a second size 200, 201.

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		Unit of measurement	Size 1		Size 2	
Absorption strength			1	2	3	4
Length	L	mm	925		810	
Maximum span	MS	mm	970		790	
Rear main-part width	CHB	mm	490	450	450	330
Front span	VS	mm	490	450	450	330

Side-portion width	EARB	mm	240	260	170	230
Hip circumference width	HUB	mm	1460	1420	1240	1120
MS/VS			1.98	2.16	1.76	2.39
Maximum transverse extent of the absorbent body in the back region	QR	mm	425	265	380	245
Minimum transverse extent of the absorbent body in the crotch region	QS	mm	160	170	165	170
QR/QS			2.7	1.6	2.3	1.4
Total absorbency	GSL	g	4062.6	3558.6	3546.8	3152.1
Crotch segment absorbency	SL	g	850.2	984.5	956.4	1026.2
GSL/SL			4.78	3.61	3.71	3.07
Maximum extent of the elastic component	QE	mm	70	70	70	70
Maximum extent of the side portion in the longitudinal direction	C	mm	140	140	140	140
QE/C			0.50	0.50	0.50	0.50

Table 2 below shows an exemplary embodiment of a preferred arrangement, according to the invention, of

folded disposable incontinence diapers with first, second and third fold arrangements of a first, second, third and fourth size.

5 The parameters MS, GF1, GF2 and EF, indicated in Table 2, are illustrated in Figures 5 and 6a-6d. Figure 5 shows, for example, a plan view of a disposable incontinence diaper of a first size 100 in an unfolded configuration. The maximum span MS can be seen. Also shown are N=2 side-
10 portion fold axes, namely the outermost side-portion fold axis 50 and an inner side-portion fold axis 51, at which the side portions 22 are folded, preferably in a Z shape, for the first fold arrangement 55 (Figure 6b). Transverse fold axes 60 are also indicated schematically. The body-
15 facing upper side of the main part 4 is formed by a centrally arranged liquid-permeable topsheet 24 and by cuff elements 23 laterally flanking the topsheet 24, which cuff elements 23 serve in a known manner as a lateral leakage protection barrier and for this purpose
20 are made of a hydrophobic non-woven material and are elasticated in the longitudinal direction. An absorbent body 6 is arranged between the topsheet 24 or the cuff elements 23 and a liquid-impermeable backsheet 25. Figure 6a shows a sectional view along the plane I-I of Figure
25 5. The maximum span MS can be seen. The side-portion fold axes 50, 51 for forming the first fold arrangement are indicated. The figure also shows the distance AB of the outermost side-portion fold axis, i.e. the outermost fold line of the first fold arrangement, from a free end of a
30 respective rear side portion 22.

Figure 6b shows, in a sectional view analogous to Figure 6a, the rear side portions with a first fold arrangement 55 and, indicated, the first product-fold axis 70 at which the first fold arrangement 55 is turned inward onto
35 the main part 4 in order to form the second fold arrangement. Figure 6b also shows the span of the disposable incontinence diaper with first fold

arrangement GF1. It also shows the extent of the first fold arrangement 55 in the transverse direction 10, hence the width BF of the first fold arrangement. The first fold arrangement is preferably releasably fixed (not shown), by virtue of the fact that the subportions of the fold arrangement lying one above the other (in the case shown in a Z shape) are temporarily joined to each other by adhesion promoters such as glue or by a small number of welding spots, in particular ultrasonic welding spots.

5 As has been stated above, the first fold arrangement, in particular in the case of the disposable incontinence diapers of the second or third or fourth size, can, instead of $N=2$, also have $N=3$ or $N=1$ side-portion fold axes. In such cases, the rear side portions are folded in particular in an M shape or W shape (if $N=3$) or a C shape (if $N=1$) to form the first fold arrangement.

10 Figure 6c shows, in a sectional view analogous to Figures 6a and 6b, the configuration after turning the first fold arrangement 55 inward onto the main part 4 of the disposable incontinence diaper along the first product fold axis 70 (second fold arrangement 56). The two folded side portions do not come to lie over each other.

15 For the sake of clarity, in the views in Figure 6c and in the following Figure 6d, the flat materials of the main part (topsheet, cuff elements, absorbent body, backsheet) are shown, not separately and not distinguishably from one another in the drawing, as a single layer.

20 It will be seen that the side portions can be grasped at a respective grip region 25, as a result of which the second fold arrangement (at each of the rear side portions) can be designed to be openable, that is to say unfoldable, in one go. The second product fold axis 71 is indicated, at which the second fold arrangement 56 is turned inward onto the main part 4 in order to form the third fold arrangement. Figure 6c also shows the span of

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the disposable incontinence diaper with second fold arrangement GF2.

Figure 6d shows, in a sectional view analogous to Figures 6a and 6b and 6c, the configuration after turning the second fold arrangement inward onto the main part 4 of the disposable incontinence diaper along the second product fold axes 71 (third fold arrangement 57). In the embodiment shown here, the two folded side portions come to lie partially over each other. However, an arrangement is also conceivable in which the two folded side portions, in the embodiment shown, do not come to lie over each other even in the third fold arrangement. Figure 6d also shows the end fold width EF of the disposable incontinence diaper with third fold arrangement 57.

Preferably, the disposable incontinence diaper with third fold arrangement 57 is then folded inward, for the purpose of packaging, along the transverse fold axes 60 indicated in Figure 5.

As is shown in Table 2, the first fold arrangements of the disposable incontinence diapers of the first and second and third and fourth size differ in terms of the number of the side-portion fold axes and/or the span GF1 and/or the distance AB of the outermost side-portion fold axis, i.e. the outermost fold line of the first fold arrangement, from a free end of a respective side portion and/or the width of the first fold arrangement BF. This makes it possible to standardize the end fold width EF of the larger disposable incontinence diapers (sizes 1-3). In addition, the second fold arrangement of both side portions of each of the disposable incontinence diapers can be designed to be opened and unfolded in one go by grasping a free end of the side portions at a grip region.

Table 2: Example of dimensions of disposable incontinence diapers of an arrangement, according to the invention,

comprising disposable incontinence diapers of a first, second, third and fourth size.

		Unit of measurement	Size 1	Size 2	Size 3	Size 4
Maximum span	MS	mm	970	790	1080	620
Number N of side-portion fold axes	N		2	3	3	1
Span of the disposable incontinence diaper with first fold arrangement	GF1	mm	690	512	690	465
Span of the disposable incontinence diaper with second fold arrangement	GF2	mm	450	330	490	290
End fold width	EF	mm	190	190	190	170
GF1/MS			0.71	0.65	0.64	0.75
GF2/MS			0.46	0.42	0.45	0.47
EF/MS			0.20	0.24	0.18	0.27
Distance of the outermost side-portion fold axis of the first fold arrangement from a free end of a respective side portion	AB	mm	80	81	80	77.5

Width of the first fold arrangement	BF	mm	70	29	60	77.5
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Claims

1. An arrangement comprising folded disposable
5 incontinence diapers at least of a first size and
folded disposable incontinence diapers of a second
size and folded disposable incontinence diapers of
a third size,
- 10 a) wherein the disposable incontinence diapers have a
longitudinal direction and a transverse direction
and furthermore have an absorbent body and a main
part comprising a front region with front lateral
15 longitudinal edges and a back region with rear
lateral longitudinal edges, and, arranged between
these, a crotch region that comes to lie between the
legs of a user, and with rear side portions which
are joined to the back region on both sides and
20 which extend in the transverse direction beyond the
lateral rear longitudinal edges of the main part,
and wherein the rear side portions have a component
elastic in the transverse direction, wherein the
rear side portions, in the region of their free end
25 in the transverse direction, each have at least one
closure means,
- b) wherein the rear side portions for placing and
closing the disposable incontinence diapers on a
user can each be placed around the body of the user
30 along a circumferential direction and can be brought
into an overlapping arrangement with an outer side
of the front region, on which they can each be
releasably affixed via the respective closure means,
- 35 c) wherein the disposable incontinence diapers of the
first size have a first maximum span MS1,

- d) wherein disposable incontinence diapers of the second size have a second maximum span MS2,
- e) wherein the disposable incontinence diapers of the third size have a third maximum span MS3,
- f) wherein $MS1 \neq MS2 \neq MS3$ and $MS1 \neq MS3$,
- g) wherein the rear side portions are folded onto themselves at a number N of side-portion fold axes running in the longitudinal direction in order to form a first fold arrangement,
- h) wherein the first fold arrangement, in each case at a first product fold axis running in the longitudinal direction, is folded inward onto a body-facing inner side of the main part in order to form a second fold arrangement,
- i) wherein the second fold arrangement, in each case at a second product fold axis running in the longitudinal direction, is folded inward in order to form a third fold arrangement,
- j) wherein the first fold arrangement of the disposable incontinence diapers of the first size differs from the first fold arrangement of the disposable incontinence diapers of the second size and from the first fold arrangement of the disposable incontinence diapers of the third size in at least one feature, wherein the one or more features are selected from the group
- number N of side-portion fold axes at which the rear side portions are folded onto themselves in order to form the first fold arrangement

- distance AB of the outermost fold line of the first fold arrangement from a free end of a respective rear side portion
 - span GF1 of the disposable incontinence diapers with the first fold arrangement
 - width BF of the first fold arrangement.
- 5
2. The arrangement as claimed in claim 1, wherein the arrangement comprises folded disposable incontinence diapers of a fourth size with a fourth maximum span MS4 that is different from MS1, MS2, MS3, and wherein the first fold arrangement of the disposable incontinence diapers of the fourth size is different from the first fold arrangement of the disposable incontinence diapers of the first size or third size or second size in at least one feature, wherein the one or more features are selected from the group
- 10
- 15
- number N of side-portion fold axes at which the rear side portions are folded onto themselves in order to form the first fold arrangement
 - distance AB of the outermost fold line of the first fold arrangement from the free end of the respective rear side portion
 - span GF1 of the disposable incontinence diapers with the first fold arrangement
 - width BF of the first fold arrangement.
- 20
- 25
- 30 3. The arrangement as claimed in claim 1 or 2, wherein MS1 and MS2 and MS3 and/or MS4 each measure 500-1300 mm.
- 35 4. The arrangement as claimed in any one of the preceding claims, wherein at least two, preferably at least three, from the group MS1, MS2, MS3, MS4 each measure 600-1200 mm.

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5. The arrangement as claimed in any one of the preceding claims, wherein a ratio GF1 to at least two, preferably at least three, preferably all, from the group MS1, MS2, MS3, MS4 is in each case 0.55-0.85, preferably 0.60-0.75.
6. The arrangement as claimed in any one of the preceding claims, wherein the disposable incontinence diapers have a span GF2 with a second fold arrangement, and a ratio GF2 to at least two, preferably at least three, preferably all, from the group MS1, MS2, MS3, MS4 is in each case 0.40-0.60, preferably 0.45-0.55.
7. The arrangement as claimed in any one of the preceding claims, wherein the disposable incontinence diapers have an end fold width EF, and a ratio EF to at least two, preferably at least three, preferably all, from the group MS1, MS2, MS3, MS4 is in each case 0.15-0.35, preferably 0.17-0.30.
8. The arrangement as claimed in claim 7, wherein the end fold width EF of at least two, preferably at least three, preferably all, selected from the group of disposable incontinence diapers of the first size, the second size, the third size, the fourth size is of the same size.
9. The arrangement as claimed in any one of the preceding claims, wherein the number N of the side-portion fold axes running in the longitudinal direction is 1-5, preferably 1-4, preferably 1-3.
10. The arrangement as claimed in any one of the preceding claims, wherein the disposable incontinence diapers are folded about at least one,

- 5 preferably at least two or at least three transverse fold axes (running in the transverse direction in order to form a fourth fold arrangement, wherein none of the transverse fold axes runs through the respective rear side portions, preferably none of the transverse fold axes runs through the respective closure means.
- 10 11. The arrangement as claimed in any one of the preceding claims, wherein the rear side portions have a grip region at a free end, and the grip region of at least one of, preferably both of, the rear side portions can be grasped by a user after the unfolding of the fourth fold arrangement and the
- 15 third fold arrangement, and the second and first fold arrangements can then be unfolded, preferably in one go.
- 20 12. The arrangement as claimed in any one of the preceding claims, wherein the arrangement comprises a first sub-arrangement of disposable incontinence diapers of the first size and/or a second sub-arrangement of disposable incontinence diapers of the second size, wherein the first sub-arrangement
- 25 of the first size has at least disposable incontinence diapers of a first absorption strength and disposable incontinence diapers of a second absorption strength, and wherein the second sub-arrangement of the second size has at least
- 30 disposable incontinence diapers of a third absorption strength and disposable incontinence diapers of a fourth absorption strength, and wherein the disposable incontinence diapers of the first absorption strength of the first sub-arrangement
- 35 have a first rear main-part width CHB1 and a first rear side-portion width EARB1,

- 5 a) wherein the disposable incontinence diapers of the second absorption strength of the first sub-arrangement have a second rear main-part width CHB2 and a second rear side-portion width EARB2,
- 10 b) wherein the disposable incontinence diapers of the third absorption strength of the second sub-arrangement have a third rear main-part width CHB3 and a third rear side-portion width EARB3,
- 15 c) wherein the disposable incontinence diapers of the fourth absorption strength of the second sub-arrangement have a fourth rear main-part width CHB4 and a fourth rear side-portion width EARB4,
- d) wherein
- CHB1>CHB2 and EARB1<EARB2
and/or wherein
20 CHB3>CHB4 and EARB3<EARB4.
- 25 13. The arrangement as claimed in claim 12, wherein an absorbent body of the disposable incontinence diapers of the first absorption strength of the first sub-arrangement has a first maximum transverse extent in the back region of QR1 and has a first minimum transverse extent in the crotch region of QS1,
- 30 wherein an absorbent body of the disposable incontinence diapers of the second absorption strength of the first sub-arrangement has a second maximum transverse extent in the back region of QR2 and has a second minimum transverse extent in the crotch region of QS2,
- 35 wherein $QR1/QS1 > QR2/QS2$,

wherein in particular $0.9 < QR2/QS2 < 2.0$,

wherein in particular $1.5 < QR1/QS1 < 3.0$,

5

and/or

10

an absorbent body of the disposable incontinence
diapers of the third absorption strength of the
second sub-arrangement has a third maximum
transverse extent in the back region of QR3 and has
a third minimum transverse extent in the crotch
region of QS3,

15

wherein an absorbent body of the disposable
incontinence diapers of the fourth absorption
strength of the second sub-arrangement has a fourth
maximum transverse extent in the back region of QR4
and has a fourth minimum transverse extent in the
crotch region of QS4,

20

wherein $QR3/QS3 > QR4/QS4$,

wherein preferably $0.9 < QR4/QS4 < 2.0$,

25

wherein preferably $1.5 < QR3/QS3 < 3.0$.

30

14. The arrangement as claimed in any one of claims 12-
14, wherein a ratio of a first crotch segment
absorbency SL1 of the disposable incontinence
diapers of the first absorption strength to a second
crotch segment absorbency SL2 of the disposable
incontinence diapers of the second absorption
strength is 0.7-1.9, preferably 0.8-1.5, and wherein
a ratio of a first total absorbency GSL1 of the
disposable incontinence diapers of the first
absorption strength to a second total absorbency

35

GSL2 of the disposable incontinence diapers of the second absorption strength is 1.0-2.5, preferably 1.0-2.0.

5

15. The arrangement as claimed in any one of claims 12-14, wherein the respective region of the rear side portions of the disposable incontinence diapers which is elastic in the transverse direction is formed by in each case an elastic component with a respective maximum extent QE in the transverse direction, wherein a ratio of a first maximum extent QE1 of the elastic component of the disposable incontinence diapers of the first absorption strength of the first size to a second maximum extent QE2 of the elastic component of the disposable incontinence diapers of the second absorption strength of the first size is 0.9-1.1, preferably 1.0;

15

20 and/or,

wherein a ratio of a third maximum extent QE3 of the elastic component of the disposable incontinence diapers of the third absorption strength of the second size to a fourth maximum extent QE4 of the elastic component of the disposable incontinence diapers of the fourth absorption strength of the second size is 0.9-1.1, preferably 1.0.

25

30 16. The arrangement as claimed in claim 15, wherein the elastic region of the disposable incontinence diapers of the first absorption strength and of the disposable incontinence diapers of the second absorption strength has identical elastic properties, preferably being formed from the same material;

35

and/or

- 5 wherein the elastic region of the disposable incontinence diapers of the third absorption strength and of the disposable incontinence diapers of the fourth absorption strength has identical elastic properties, preferably being formed from the same material.
- 10 17. The arrangement as claimed in any one of claims 12-16, wherein the respective region of the rear side portions of the disposable incontinence diapers which is elastic in the transverse direction is formed by in each case an elastic component with a respective maximum extent QE in the transverse direction, wherein a ratio of the maximum extent QE
- 15 of the elastic components of the rear side portion to a maximum extent C of the rear side portion of the disposable incontinence diapers in the longitudinal direction selected from at least two, preferably at least three, preferably all of the
- 20 group of disposable incontinence diapers of the first absorption strength, disposable incontinence diapers of the second absorption strength, disposable incontinence diapers of the third absorption strength, disposable incontinence
- 25 diapers of the fourth absorption strength, is in each case 0.3-0.7, preferably 0.4-0.6, more preferably 0.45-0.55, preferably 0.50.
- 30 18. The arrangement as claimed in any one of the preceding claims, wherein a ratio of the respective maximum extent C of the rear side portion of the disposable incontinence diapers of the first size to the respective maximum extent C of the rear side portion of the disposable incontinence diapers of
- 35 the second size is 0.9-1.1, preferably 1.0.

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19. The arrangement as claimed in any one of the preceding claims, wherein the disposable incontinence diapers of the first size and the disposable incontinence diapers of the second size and the disposable incontinence diapers of the third size are designed in such a way that, in the state when placed on a user, a respective elastic region at least partially bridges a gap P between a front lateral longitudinal edge of the front region and a rear lateral longitudinal edge of the back region.

20. The arrangement as claimed in any one of the preceding claims, wherein a ratio of the maximum span MS of the disposable incontinence diapers to a front span VS of the disposable incontinence diapers is 1.3-2.8, preferably 1.4-2.7, more preferably 1.5-2.6, more preferably 1.6-2.5.

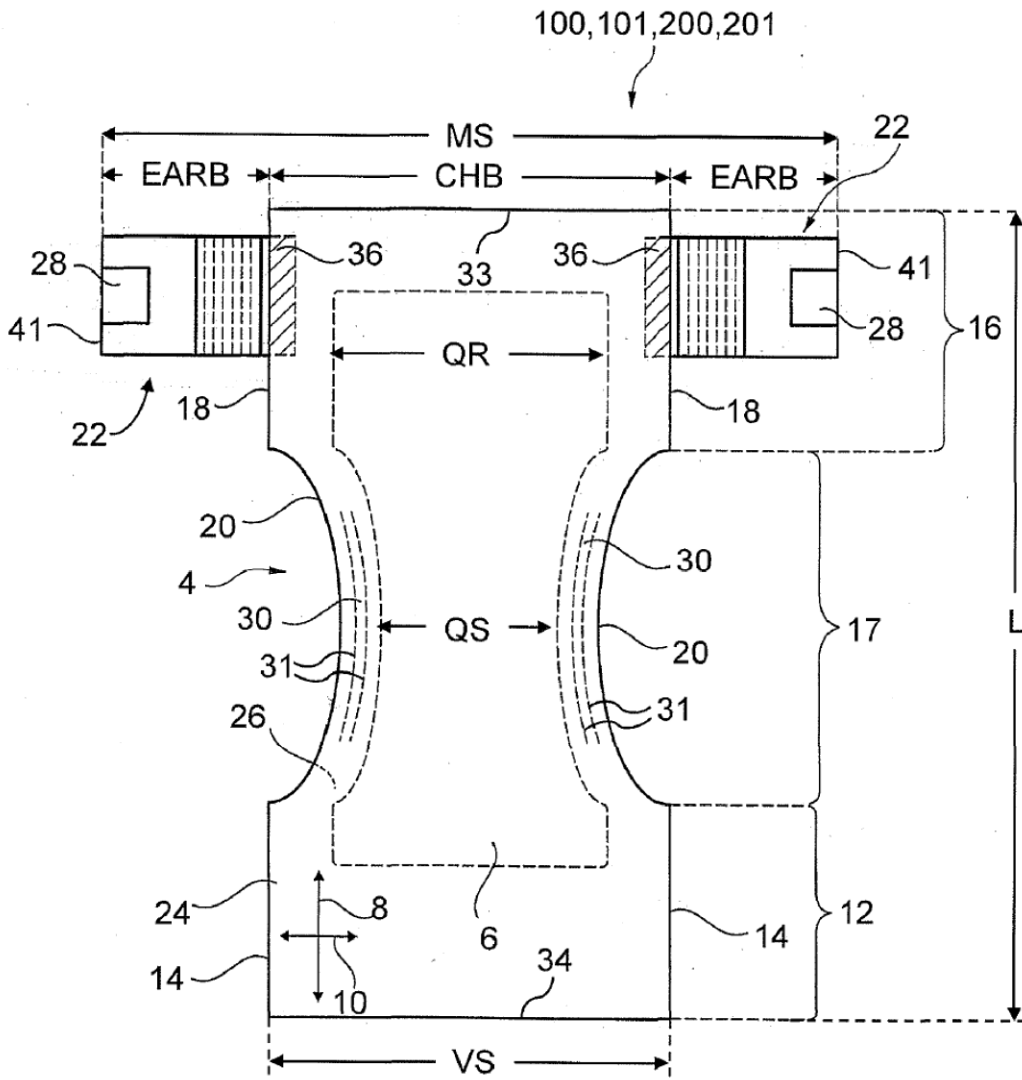


Fig. 1

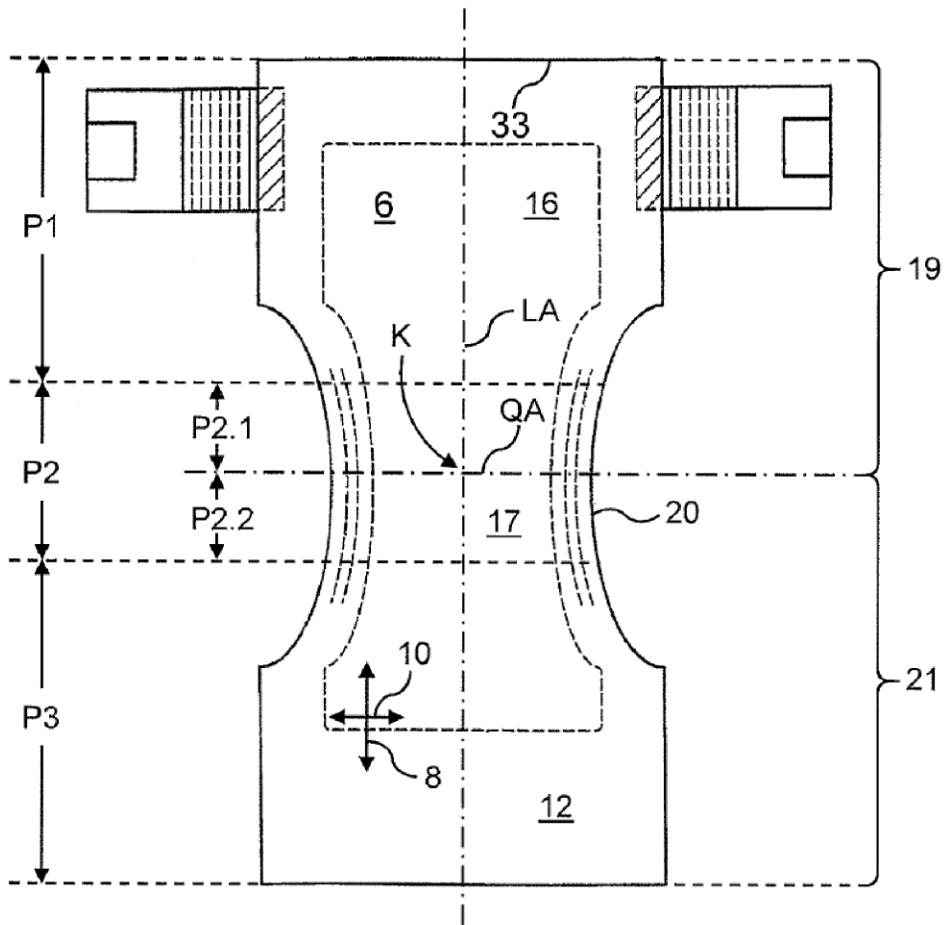


Fig. 2

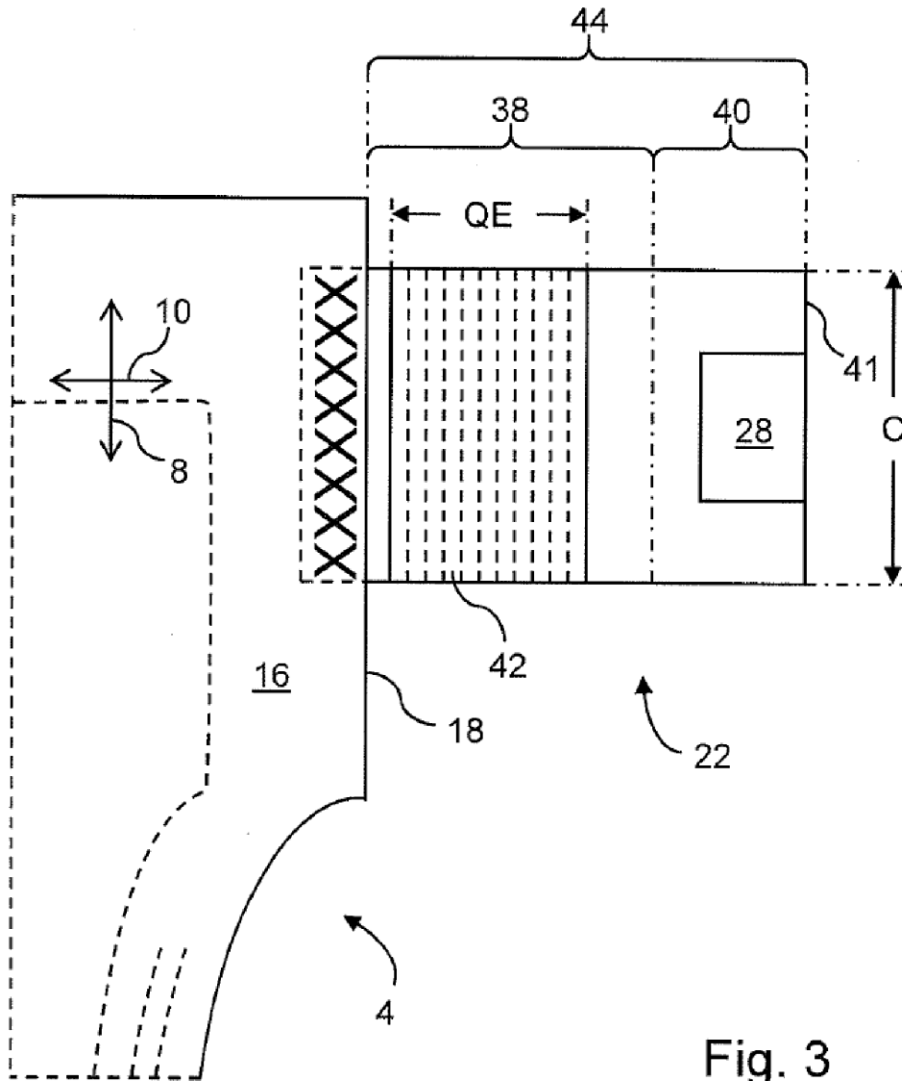


Fig. 3

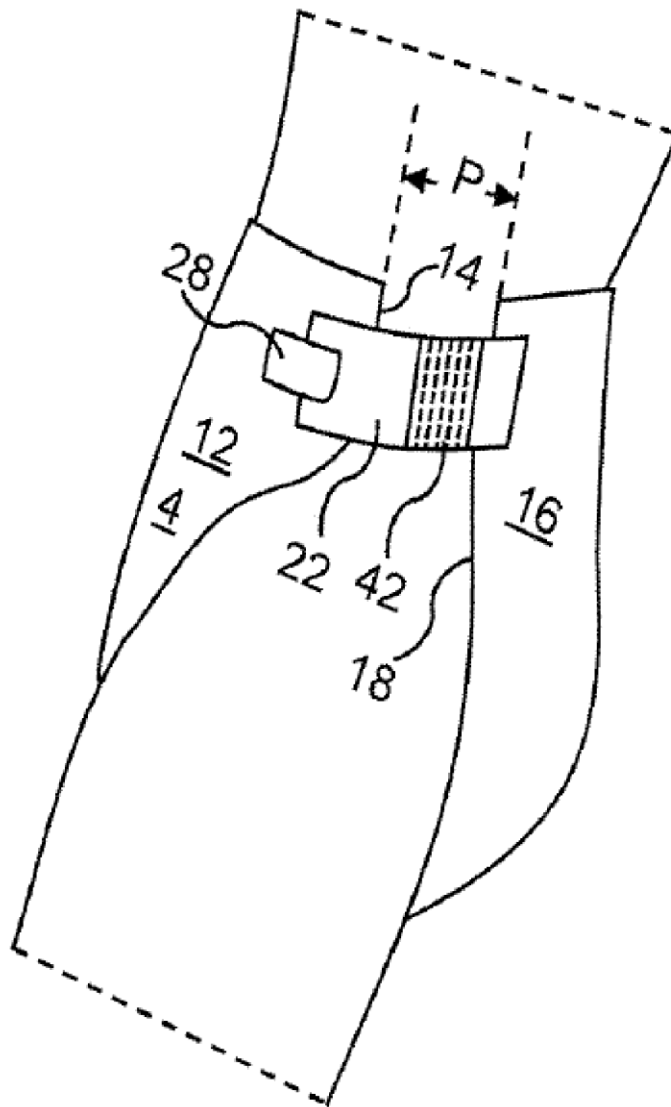


Fig. 4

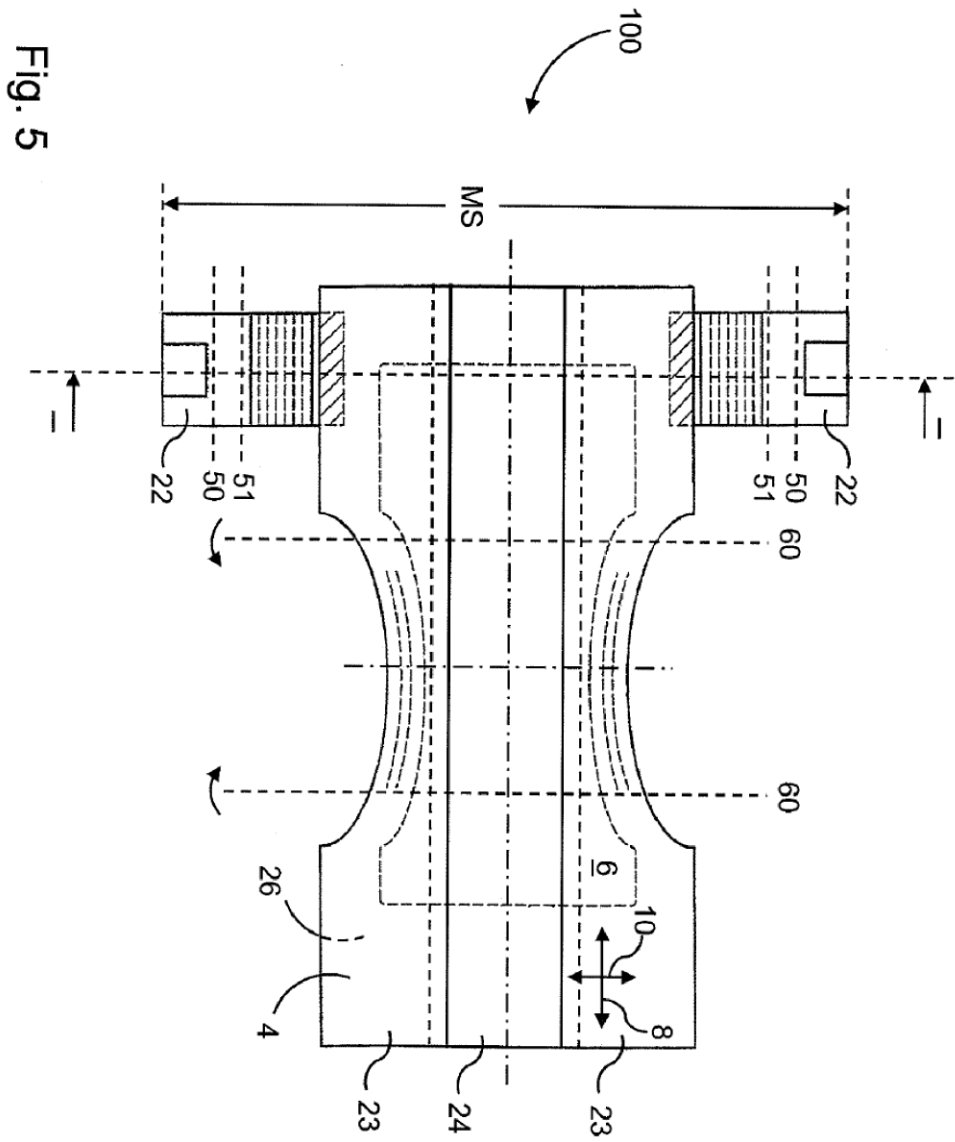


Fig. 5

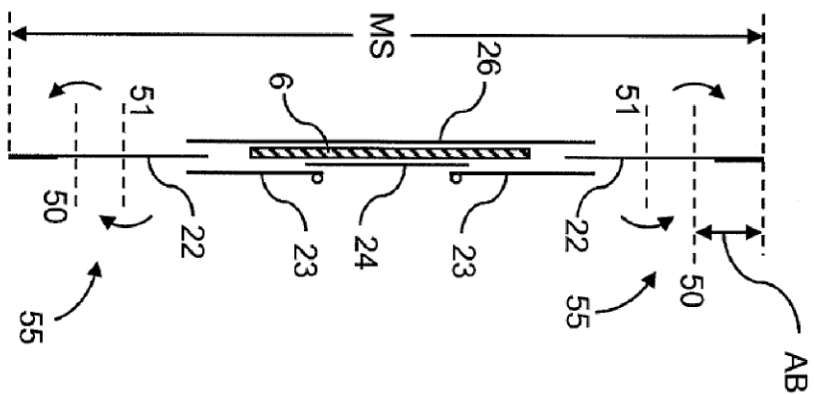


Fig. 6a

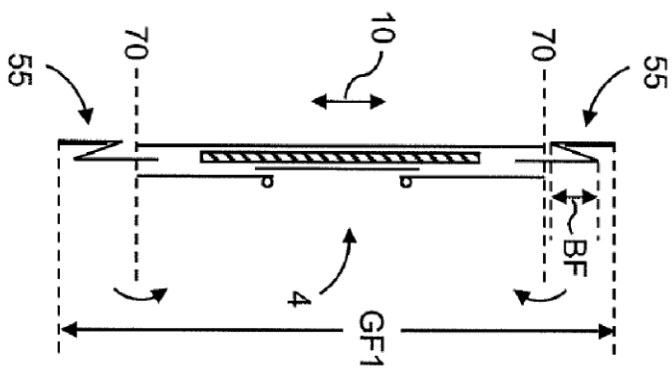


Fig. 6b

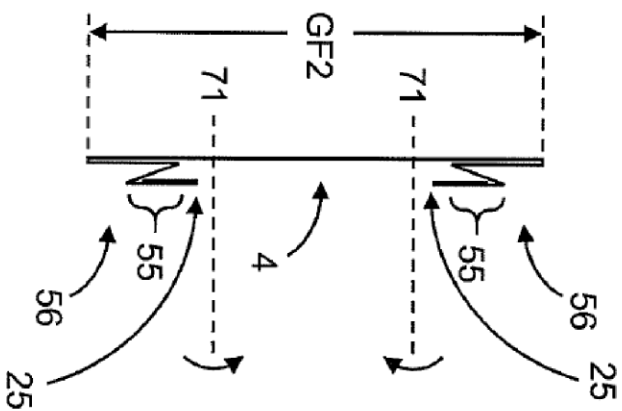


Fig. 6c

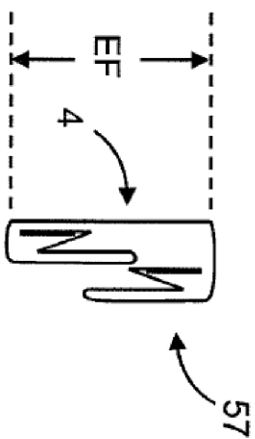


Fig. 6d