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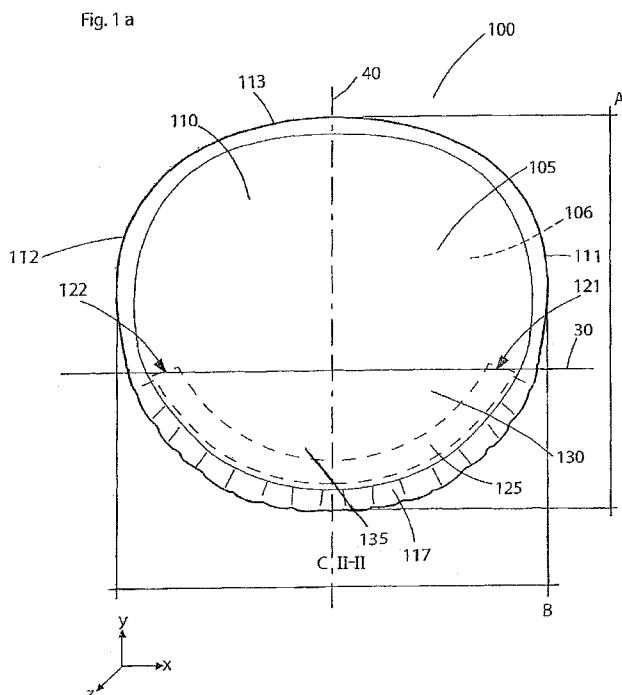
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(57) Abstract: The invention relates to a male hygiene article (100), said article (100) having a transverse (x), a longitudinal (y) and a thickness direction (z), said article (100) being divided by a transverse dividing line (30) into a front region (110) with a front transverse edge (113) and a rear region (130) with a rear transverse edge (117), and said article (100) comprising a body-facing surface (105) and a garment-facing surface (106). The male hygiene article (100) comprises at least one elastic member (125) which is arranged on said article (100) such that it is exclusively localised within said rear region (130), said elastic member (125) having a first terminal point (121) and a second terminal point (122) on said transverse dividing line (30), wherein said elastic member (125) extends in a curved manner along said rear transverse edge (117) such that said elastic member (125) causes at least a portion of said rear region (130) to adopt a rear leakage barrier (135) in said thickness direction (z) along said transverse dividing line (30).

MALE HYGIENE ARTICLE

TECHNICAL FIELD

The present invention relates to a male hygiene article (hereinafter referred to as male hygiene article, hygiene article, or simply as article). The male hygiene article is preferably disposable, i.e. it is intended for single use. More specifically, the present invention concerns a male hygiene article having a compatible shape and size to be used by men primarily suffering from post void dribbling.

10 TECHNICAL BACKGROUND

In practice, conventional light incontinence articles are many times used by men to provide protection against all kinds of urine leakage independent of the actual level of leakage. However, to meet increasing demand for discretion in the field of light incontinence articles, various shapes and sizes have been produced. In this way, the user can choose the form which is found most suitable. Nevertheless, while there are a great many variations in the specific structural design of light incontinence articles, the demand for discretion is particularly present for men primarily suffering from leakage of a small volume of urine immediately or shortly after completing the act of urinating, i.e. post void dribbling - a sub-field of light incontinence.

Light incontinence, i.e. leakage of small amounts of urine, is a disability which is generally hidden and which causes sufferers to involuntarily leak urine. Although referred to as light incontinence in terms of the amount of urine leakage, it does not mean that the discomfort experienced by the person affected is insignificant. Furthermore, it is well known that the problem and its causes are different between men and women. Many men who suffer from prostate problems also suffer from light incontinence. For instance, many men who have had prostate operations have encountered problems with light incontinence.

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Stress incontinence is one form of light incontinence relating to small amounts of urine leakage which is either due to abrupt increases in intra-abdominal pressure

(e.g. with coughing, sneezing, laughing, bending, or lifting) or to prostatectomy. The leakage volume is usually low to moderate.

Another form of light incontinence is post void dribbling, sometimes called terminal dribbling, which can be defined as the leakage of a small volume of urine immediately or shortly after completing the act of urinating. The main reason behind post void dribbling is because the urethra has lost muscle tissue that supports it. Post void dribbling is often one of the first manifestations of prostatic enlargement, a ubiquitous process in which the prostate gland gradually increases in size.

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Light incontinence is more common amongst women than amongst men, which means that incontinence guards for women are better known and there are more variants to choose from. Furthermore, the incontinence guards intended for women are customized to the female anatomy which means that these are by no means suitable for the male anatomy. Thus, due to the anatomical differences between men and women, and the differences in the nature of the incontinence, incontinence guards have been specially designed for male users.

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In addition to incontinence guards used for light incontinence, there are also incontinence guards available for persons suffering from heavy incontinence, i.e. incontinence guards intended for large volumes of urine. Such incontinence guards are however unnecessarily large and awkward to wear for male users who only suffer from light incontinence. Additionally, incontinence guards directed to heavy incontinence are uncomfortable to wear and are extremely indiscrete under normal clothing.

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For certain male incontinence guards, intended for light incontinence, the enclosure of the genitals can be achieved by creating a basin-like shape by means of attaching pre-stretched elastic threads along the longitudinal edges of the guard. One example of such a male incontinence guard is described in WO 1992/015269. The guard has a shape which is wider at the front of the guard and tapers towards the rear edge of the guard so as to allow the guard to fit comfortably in the groin region of a male wearer. Elastic threads are present solely along the longitudinal edges of

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the guards such that a basin-like configuration is obtained to surround the scrotum, either completely or partially.

5 EP 0 091 412 relates to a sanitary napkin having elastic means along the longitudinal edges that are arranged spaced from the core. The elastic means contract the mid-portion of the product to create barriers against lateral leakage. A similar construction using elastic means along the length of the longitudinal edges are disclosed in EP 0 167 931. In this way, the longitudinal edges bow the pad and form a trough shape.

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DE 202009001559 relates to a thin absorbent pad intended for taking care of the remaining drops after urination. It is disclosed that the overall thickness of the pad should be 2 mm. No information is mentioned about the use of the pad in male underwear or how the pad is three-dimensionally shaped such that it can be formed around the genitals of the wearer.

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Despite the activity in the field, there remains a need for a male hygiene article to be used in male underwear and primarily intended for men suffering from post void dribbling. Furthermore, it is desirable that the article affords an adequate degree of leakage security. However, a balance is needed between the technical function of providing security against leakage, and the requirement of providing an article that is comfortable and inconspicuous to wear. This balance is considered necessary since men suffering from post void dribbling are many times not used to wear hygiene-related articles and tend to experience an awkward and embarrassing feeling when using them. It is normally their first introduction to male hygiene articles and post void dribbling is likely to be appreciated as more annoying than serious. Hence the volume of the article is a separate feature that deserves attention.

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Finally, as the incontinence article is preferably disposable, the cost of the components is also an important factor which should be taken into consideration. Bearing in mind that incontinence articles are produced in very large quantities, even a minor change of the material used for producing one incontinence article will have a great impact on the overall material savings. Thus, yet another area of

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interest is to minimize the amount of material used but without limiting the functionality of the male hygiene article.

SUMMARY OF THE INVENTION

5 The present invention concerns a male hygiene article, said article having a transverse (x), a longitudinal (y) and a thickness direction (z). The article is divided by a transverse dividing line into a front region with a front transverse edge, and a rear region with a rear transverse edge. The article further comprises a body-facing surface and a garment-facing surface.

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The article has at least one elastic member being arranged on the article such that it is exclusively localised within the rear region. The elastic member further has a first terminal point and a second terminal point on the transverse dividing line. The elastic member extends in a curved manner along the rear transverse edge such
15 that the elastic member causes at least a portion of the rear region to adopt a rear leakage barrier in the thickness direction (z) along the transverse dividing line.

The curved elastic member causes the rear region to adopt a rear leakage barrier so as to prevent urine leakages in the rear region. In particular, urine leakage is
20 prevented along the rear transverse edge. Due to the curved elastic member, the rear leakage barrier provides the rear region with a basin-shaped appearance allowing a part of the male genitals to be covered. A curved elastic member along the rear transverse edge is essential for the invention since a homogenous contraction of the rear region along the rear transverse edge is obtained, which
25 ensures an effective urine leakage barrier. Without being bound by any theory, the use of a curved elastic member is different from the use of a straight elastic member solely arranged along the transverse dividing line in the transverse direction. The difference is that a straight elastic member results in that both the front region and rear region are affected by the contraction. This is understood to be an undesired
30 contraction of the article for its specific purpose, and creates an unnecessary bulkiness.

Accordingly, by means of the curved elastic member, the adaptation of the shape of at least a portion of the rear region further ensures that protection against urine

leakages is maintained on a sufficiently appropriate level for men suffering from post void dribbling. The rear leakage barrier specifically ensures that liquid does not run out past the rear transverse edge of the product. Furthermore, the invention makes it possible to utilize the absorption capacity of the article at a maximum. This is due to the fact that the rear leakage barrier acts as a rear positioned-barrier to collect and keep the urine on the body-surface of the article until it has been sufficiently absorbed. Hence, the article can be produced with less absorbent material and super absorbents to avoid an unnecessary bulky article, which also reduces the manufacturing costs. The invention therefore provides the male user with an article that is discrete and neat, and has improved leakage security against urine leakage. In addition, the rear leakage barrier provides the user with an article that is easy to position in relation to the body of user. That is, the positioning of the rear leakage barrier facilitates for the user when the article is to be put on, since the user easily can differentiate between the front and rear region of the article.

In one aspect of the invention, the rear leakage barrier makes an angle (α) in the thickness direction (z) with the x-y plane of between 30° and 120°, preferably between 60° and 110°, and more preferably between 80° and 100°. The angle (α) is important for providing an article that has an improved protection against leakage of small amounts of urine in the rear region.

In another aspect of the invention, the front region exclusively extends in the transverse (x) and the longitudinal (y) directions. This means that the volume of the article, i.e. the extension of the article in the thickness direction (z), is kept as small as possible in order to provide the wearer with a discrete and neat article.

The dimensions of the article can be governed by the expression $0.7 < A/B < 1.3$, preferably $0.8 < A/B < 1.2$, and more preferred $0.9 < A/B < 1.1$, where A is the longitudinal extension of the article and B is the transverse extension of the article. The longitudinal extension of the front region is preferably 50 - 90 %, more preferably 65 - 85 %, and most preferably 70 - 80 % of the longitudinal extension of the article.

The article preferably tapers slightly towards the rear transverse edge to fit comfortably in the crotch portion of a male user. That is, the front transverse edge is longer than the rear transverse edge.

- 5 In yet another aspect of the invention, the transverse dividing line constitutes a folding line such that the elastic member causes the rear region to adopt a rear leakage barrier in the thickness direction (z) along the folding line. By means of a folding line, the adoption of the rear leakage barrier along the transverse dividing line is improved.

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The elastic member is attached to one of the topsheet, backsheet, or absorbent core.

- 15 In a further aspect of the invention, a second elastic member is arranged on the article such that the first and second elastic members are exclusively localised within the rear region. The second elastic member has a first terminal point and a second terminal point on the transverse dividing line. The second elastic member is attached to one of the topsheet, backsheet or absorbent core. The first and second elastic member can be attached to the article with different tensions. The preferred
20 tension difference between the elastic members is selected in view of the desired angle (α). By means of a second elastic member an even more homogenous contraction of the rear region is obtained. Furthermore, the use of a first and a second elastic member allows the manufacturer of the article to apply two elastic members having different tension so as to obtain an optimal rear leakage barrier.

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BRIEF DESCRIPTION OF THE FIGURES

Figure 1a shows an embodiment of a male hygiene article according to the present invention, in its flat outstretched state, and seen from the body-facing surface.

- 30 Figure 1b shows a cross-sectional view along the line II-II in Figure 1.

Figure 2a shows a three-dimensional view of a male hygiene article according to the present invention in a user-like configuration.

Figure 2b shows a cross-sectional view along the line II-II in Figure 2a.

Figure 3a shows a male hygiene article according to the present invention with a second elastic member, and seen from the body-facing surface.

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Figure 3b shows a cross-sectional view along the line II-II in Figure 3a.

Figure 4 shows a three-dimensional view of a male hygiene article according to the present invention in a user-like configuration.

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DESCRIPTION OF THE ILLUSTRATIVE EMBODIMENTS

In the following, the embodiments of the present invention will be described in further detail with reference to the illustrative Figures as attached hereto.

15 Figures 1a and 1b illustrate a male hygiene article 100 according to the invention in a flat outstretched state. The male hygiene article 100 comprises a body-facing surface 105, a garment-facing surface 106 and preferably an absorbent core 107 located between the body-facing surface 105 and the garment-facing surface 106. The male hygiene article 100 has a transverse direction x and longitudinal direction
20 y. The hygiene article 100 is further divided by a transverse dividing line 30 into a front region 110 and a rear region 130. The positioning of the front region 110 and the rear region 130 is explained in the following sections. The positioning of the regions 110, 130 is also illustrated in figure 2a and 4.

25 Figure 1b, which is a cross sectional view of the male hygiene article 100, shows a backsheet 116 (garment-facing surface 106), topsheet 115 (body-facing surface 105) and an absorbent core 107. The garment-facing surface 106 is the surface that makes contact with the garment of the user when the article 100 is being worn. The body-facing surface 105 is the surface that makes contact with the user when the
30 article 100 is being worn in order to receive the urine. Typically, the body-facing surface 105 of the article 100 comprises (or consists of) the topsheet 115, while garment-facing surface 106 comprises (or consists of) the backsheet 116. The article 100 may furthermore comprise a fluid acquisition layer (not shown) located between the topsheet 115 and the absorbent core 107.

Since the male hygiene article 100 is adopted to primarily meet the demand from users suffering from post-void dribbling, the article 100 can be designed without an absorbent core or just with a very thin absorbent core. In one preferred embodiment, the thickness of the absorbent core is about 1-3 mm. If the article has no separated absorbent core, the topsheet has to be adopted to provide at least some absorbent capacity.

The topsheet 115 and the backsheet 116 of the male hygiene article 100 preferably have a somewhat greater extension in the x-y plane than the absorbent core 107 and the acquisition layer, and extend outside the edges thereof. The topsheet 115 and the backsheet 116 are connected to each other within the projecting portions thereof. Joining can occur by gluing, or by welding by means of ultrasound or a laser, or by mechanical joining, for example in the form of embossing or compression, etc. or by some other appropriate method of joining, for example by thermal bonding.

Considering that the liquid-permeable topsheet 115 is intended to be in direct contact with the user's body, the topsheet is preferably manufactured from a material that exhibits characteristics such as dryness and softness when the absorbent product is being worn. It is also desirable for the topsheet to be non-irritating to the skin and to have a soft and textile-like surface which remains dry, even in the event of repeated wetting. The topsheet could consist of, or include, a nonwoven material, e.g. a spunbond nonwoven material, a carded nonwoven material, a thru-air nonwoven material, a spunlace nonwoven (hydroentangled) material, a meltblown nonwoven material, a wetlaid nonwoven material, or a combination of these. Said nonwoven material could be based on either natural fibres such as cellulose or cotton, or alternatively on synthetic fibres such as for example polypropylene (PP), polyethylene (PE) polyester (PET), polyamide (PA), or a combination of these. If a combination is used, this could be a mixture of fibres from different natural and/or synthetic polymers, although each fibre can also contain different polymers (for example PP/PE bi-component fibres or PP/PE copolymers).

The topsheet may consist of, or include, a perforated, hydrophobic nonwoven material in order to keep the surface which is closest to the user's body dry. Additionally, the holes of the perforated, hydrophobic nonwoven material impart a textile-like and comfortable feel to the topsheet.

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The topsheet may further consist of, or include, a perforated plastic film.

The diameter of the holes of such a perforated, hydrophobic nonwoven material is larger than the distance between the fibres in the material. In this way, liquid can be led down through the holes in the topsheet to the subjacent absorption core. The skilled person is able to understand how the holes in the perforated, hydrophobic nonwoven material may be adjusted depending on the intake properties and the type of absorbent article which is to be produced.

15 The liquid-permeable topsheet could also comprise several layers of material, i.e. a laminate. Such a laminate could for example comprise a first and a second layer of materials. Alternatively, the laminate could consist of the same material or a combination of the following materials: perforated film/nonwoven, perforated film/perforated film, nonwoven/nonwoven, perforated nonwoven/nonwoven, and perforated nonwoven/perforated nonwoven. Herein, it is recognized that the first layer of material is the layer which is intended to be facing the user, and the second layer of material is subjacent the first layer of material. Moreover, the laminate could be fully or partially perforated. That is to say, holes could be made in the first layer, second layer or in both the first and second layers. The article could also be perforated solely in the central region or in the full extent of the article.

The layers of the laminate could be joined together by means of gluing, or by welding by means of ultrasound or laser, or by mechanical joining, for example in the form of embossing or compression, etc. or by some other appropriate method of joining, for example by thermal bonding, co-extrusion or coating.

Reference is made to the entire content of EP 1 066 006 B1 and EP 1 102 678 B1, both disclosing suitable materials and combinations of materials which are suitable

for a laminate, and also disclosing a method for preparing a suitable laminate for the use as a topsheet.

One preferred example of a suitable material for the topsheet is a 18 g/m² spunbond
5 nonwoven from Union, available under the trade name S1800 PPW.

The topsheet could also be made from renewable raw materials. An example of such a topsheet based on renewable raw materials is TERCOT 20, commercially available from Fiberweb.

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The backsheet 116 is preferably liquid-impermeable and could consist of a plastic film, e.g. a polyethylene or polypropylene film, a non-woven material which for example could be treated with a liquid impervious material or a hydrophobic non-woven material which resists liquid penetration, or a laminate comprising plastic
15 films and nonwoven materials. Other types of liquid barrier materials could also be used as liquid-impermeable backsheets, such as e.g. closed-cell plastic foams or various liquid barrier laminates. It is preferred that the backsheet is permeable to air and vapour so as to allow vapour to escape from the absorbent core, while still preventing liquids from passing there through. Examples of breathable backsheet
20 materials are porous polymeric films, nonwoven laminates from spunbond and meltblown layers, laminates from porous polymeric films and nonwovens.

Another suitable design of the backsheet is to use a laminate with a textile nonwoven outer layer having a tailored appearance to the article such that there is a
25 soft and non-sticky portion where the backsheet may come into contact with the user's skin. The contact between the backsheet and the user's skin may occur e.g. at edges in the crotch portion.

One preferred example of a suitable material for the backsheet is a 25 g/m²
30 nonwoven/plastic laminate from Trioplanex, available under the trade name W14Ma11.

The backsheet 116 could also be made from renewable materials. Examples of such backsheets are Bio-Air, a plastic film commercially available from Nuova

Pansac, and PLA/PP Bico 50/50, a non-woven material commercially available from Fiberweb.

The absorbent core 107 is the absorbent structure between the two surfaces 105, 106 of the male hygiene article 100. The absorbent core 107 could be of any conventional kind. Examples of commonly occurring absorbent materials are cellulosic fluff pulp, tissue layers, highly absorbent polymers, so-called super absorbent polymers (SAP), absorbent foam materials, absorbent non-wovens or the like. SAP are water-swellaable, water-insoluble organic or inorganic materials capable of absorbing at least about 10 times their weight as according to ISO 17190-6 "Gravimetric determination of fluid retention capacity in saline solution after centrifugation". Organic materials suitable for use as super absorbent materials include natural materials such as polysaccharides, polypeptides and the like, as well as synthetic materials such as synthetic hydrogel polymers. Such hydrogel polymers include, for example, alkali metal salts of polyacrylic acids, polyacrylamides, polyvinyl alcohol, polyacrylates, polyacrylamides, polyvinyl pyridines, and the like. Other suitable polymers include hydrolyzed acrylonitrile grafted starch, acrylic acid grafted starch, and isobutylene maleic anhydride copolymers and mixtures thereof. The hydrogel polymers are preferably lightly crosslinked to render the material substantially water insoluble. Preferred super absorbent materials are further surface crosslinked so that the outer surface or shell of the super absorbent particle, fiber, flake, sphere, etc. possesses a higher crosslink density than the inner portion of the super absorbent. The super absorbent materials may be in any form suitable for use in absorbent composites including particles, fibers, flakes, spheres, and the like.

It is common to combine cellulosic fluff pulp with super absorbents in an absorbent core. It is also conventional to have absorbent cores comprising layers of different materials with different properties in terms of liquid acquisition capacity, liquid distribution capacity and storage capacity. The thin absorbent cores which are common in incontinence articles often comprise a compressed mixed or layered structure of cellulosic fluff pulp and super absorbents. For example, the absorbent core material could comprise an upper absorbent core and a lower absorbent core. The term "upper" as used herein relates to the portion of the article intended to be

positioned closer to the user when in use, whereas the term "lower" as used herein relates to the portion of the article closer to the body-facing surface thereof. Furthermore, SAP in the lower absorbent core has the main function of increasing the liquid storing capacity of this layer whereas the main function of SAP in the upper absorbent core is to prevent rewet of liquid absorbed in this layer if the article is compressed by external forces during use. The SAP in the upper absorbent core could be of a different type than the SAP used in the lower absorbent core or be present in a lower percentage than in the lower absorbent core.

- 10 The SAP may be applied in localised areas of an absorbent core, e.g. in intake regions, liquid distribution regions and/or liquid retention regions. The person skilled in the art will understand how the concentration of SAP in an absorbent core may be adjusted depending on the absorbent properties and the type of absorbent article which is to be produced, e.g. a high amount of SAP may be used in order to achieve a thin absorbent article, while lower amounts may be used in some hygiene articles intended for light incontinence products.

One preferred example of a suitable material for the absorbent core is pulp mixed with approximately 30 % of SAP, such as SAP from BASF, Ludwigshafen, Germany available under the trade name Hysorb M7125. The mixture of cellulose fluff and SAP preferably has a density of 0.08 – 0.13 g/cm³.

The absorbent core 107 may be made from, or comprise, a chlorine-free fluff pulp such as Totally Chlorine Free fluff pulp which is commercially available from Stora Enso.

Optionally, the male hygiene article 100 may comprise a fluid acquisition layer for a quick transport of body fluids. The fluid acquisition layer has an open porous structure and should be able to quickly receive and temporarily store a certain amount of fluid and transfer it further to the underlying absorbent core. This is important, especially for thin, compressed absorbent articles of today, which often have a high content of SAP. Although these articles certainly have high absorption capacities, they sometimes have long acquisition times and cannot instantaneously cope with receiving the large amounts of liquid which can be released within a few

seconds during urination. The fluid acquisition layer is usually a so-called high loft material and may be produced by carding and through-air bonding or by needling of synthetic fibres, such as polyester, polypropylene or mixtures thereof. A suitable material for the acquisition layer is a hydrophobic wadding of through air nonwoven
5 available from LIBELTEX, having the trade name DRY WEB T 23W.

As previously mentioned, the male hygiene article 100 has a transverse direction (x), longitudinal direction (y) and thickness direction (z), and is further symmetric about a longitudinal centre line 40. The male hygiene article 100 is also divided by a
10 transverse dividing line 30 into a front region 110 with a front transverse edge 113, and a rear region 130 with a rear transverse edge 117.

A preferred shape of the article 100 is illustrated in e.g. Figure 1a, which shows the article 100 when it is in a flat outstretched state in the x-y plane. In this state there is
15 no impact from any elastic members. Figures 2a and 4 show the article 100 in a user-like configuration.

The front region 110 is the region of the article 100 which is intended to be located forward on the wearer when the article is being worn. The front region 110 is defined
20 on one side by the front transverse edge 113, on two opposite sides by a portion of the longitudinal edges 111, 112 of the article 100 and on the remaining side by the transverse dividing line 30 of the article 100. The transverse dividing line 30 is an imaginary line that defines the longitudinal extension of the front region 110, and the rear region 130. The front region 110 extends in the longitudinal direction (y) a
25 distance of up to 90 mm, preferably up to 70 mm, most preferably up to 50 mm from the front transverse edge 113. The dimension is measured along the longitudinal centre line 40 when the front region 110 is in a flat outstretched state.

The rear region 130 is the region of the article 100 which is intended to be located
30 rearward on the wearer when the article 100 is being worn. The rear region 130 is defined on one side by the rear transverse edge 117, on two opposite sides by a portion of the longitudinal edges 111, 112 of the article 100 and on the remaining side by the transverse dividing line 30 of the article. The rear region 130 extends in the longitudinal direction (y) a distance of up to 90 mm, preferably up to 70 mm,

most preferably up to 50 mm from the rear transverse edge 117. The dimension is measured along the longitudinal centre line 40 when the rear region 130 is in a flat outstretched state. The transition between the front transverse edge 113 or rear transverse edge 117 and an adjoining longitudinal edge, 111, 112 may be clear from the shape of the article. If not, it may be determined by drawing a tangent to the edge of the article, and calculating the angle that this tangent makes with the transverse direction (x). As the tangent is moved to different points along the edge of the article, the angle it makes with the transverse direction (x) will vary. The transition between the front transverse edge 113 or rear transverse edge 117 and an adjoining longitudinal edge, 111, 112 is that point at which the derivative of the angle between the tangent and the transverse direction with respect to the transverse direction (x) is greatest.

The longitudinal edges 111 and 112 are preferably slightly curvilinear, as illustrated in Figure 1. The curvilinear shape of the longitudinal edges 111, 112 provides an article which comfortably follows the anatomy of the wearer. However, the longitudinal edges 111, 112 could also be straight. The article 100 preferably tapers slightly towards the rear transverse edge 117. That is, the front transverse edge 113 is longer than the rear transverse edge 117. The tapered shape allows the article 100 to fit comfortably in the crotch region of a male user. Thus, as illustrated in Figure 1a, the male hygiene article 100 of the present invention may essentially have the shape of an ellipse. The shape of the article 100 may also be essentially a circle or an isosceles trapezoid. The expression "essentially isosceles trapezoid" in this context means that, for instance, the corners of the essentially isosceles trapezoid may be rounded or that the edges 111, 112, 113 and/or 117 of the male hygiene article 100 may not be completely linear, but that the article has the general form as described above.

Furthermore, it is desirable that the garment-facing surface of the backsheet 106, has at least one area of adhesive means (not shown). The adhesive means are arranged so as to fix the article to the garment (e.g. the underwear) of a user.

For the purpose of minimizing environmental impact, it is preferred that the area of the adhesive means is as small as possible without compromising a firm and secure

fixation of the male hygiene article 100 to the underwear of the user. The adhesive means may be applied in any continuous or intermittent way and geometrical pattern, e.g. rectangular, squared, oval, polygonal, circular, triangular etc.

- 5 The adhesive means could be any kind of pressure-sensitive adhesive that is commercially available, including cold, pressure-sensitive adhesives such as the acrylate adhesives, generally combined with tackifiers such as polyterpenes, or rapid-setting thermoplastic adhesives such as styrene and butadiene copolymers. Furthermore, the adhesive could be a hot melt adhesive or a pressure-sensitive hot
10 melt adhesive. Other ingredients such as fillers, antioxidants and pigments may be included. The adhesive could also be cured by UV-radiation, as described in WO 2006/071161.

- Prior to use of the article 100, the adhesive means are covered by a strip of release
15 material. The release material protects the adhesive means from dirt and damage and prevents the adhesive means from adhering before the article 100 is to be used. The strip of release material also has the function of preventing the adhesives from drying out prior to use. The single strip of release material could be made of kraft paper, calendered paper, or any other materials well-known in the art for such
20 purposes. The face of the release material, which contacts the adhesive means could have a release coating, such as silicone, to easily facilitate the removal of the release material. Suitable release papers are marketed by Loparex, available under the trade name ESP 39. If desired, the outwardly oriented face of the release material could further comprise indicia, such as advertising or user instructions,
25 thereon.

- As illustrated in Figures 1a, 1b, 2a and 2b, a male hygiene article 100 according to a first aspect of the invention is shown. The article 100 comprises, as previously explained, a front region 110 with a front transverse edge 113 and a rear region 130
30 with a rear transverse edge 117. The article comprises at least one elastic member 125 that is arranged on the article 100 such that it is exclusively localised within the rear region 130. The elastic member 125 has a first terminal point 121 and a second terminal point 122 on the transverse dividing line 30. The elastic member 125 further extends in a curved manner along the rear transverse edge 117 such that the elastic

member 125 causes at least a portion of the rear region 130 to adopt a rear leakage barrier 135 in the thickness direction z along the transverse dividing line 30.

5 Since the elastic member 125 extends in a curved manner along the rear transverse edge 117, the elastic member 125 has a major extension in the width (x) direction of the article 100 and a minor extension in the length (y) direction of the article 100. Herein, the term "curved elastic member 125" equally denotes that the elastic member 125 extends in a curved manner along the rear transverse edge.

10 The first and second terminal points 121, 122 of the elastic member 125 represent the functional ends of the elastic material. The terminal points may be the physical ends of the elastic member 125, as illustrated in Figure 1a. Each terminal point is desirably spaced from the longitudinal edge by at least 5 mm, preferable by at least 8 mm, more preferable by at least 11 mm, and most preferable by at least 14 mm.
15 The measurement is to be carried out when the article is in a flat outstretched state and extends solely in the x-y plane.

The elastic member 125 is preferably applied in a pre-stretched condition and may, for instance, be in the form of elastic threads, bands or the like. The use of elastic
20 foam material is also conceivable. "Elastic member" is in the present application meant a material that recovers at least 10% after elongation, preferably at least 25%. The elastic member 125 is attached, e.g. by means of gluing, to one or to both of the topsheet or backsheet 115, 116, and/or to the absorbent core 107. Methods of applying elastics to hygiene products are well-known to the person skilled in the art.
25 In one aspect of the invention, the elastic member 125 is desirably spaced from any edge of the article by at least 5 mm, preferable by at least 8 mm, more preferable by at least 11 mm, and most preferable by at least 14 mm. The measurement is to be carried out when the article is in a flat outstretched state and extends solely in the x-y plane.

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The elastic member 125 causes the rear region 130 to adopt a rear leakage barrier 135 so as to prevent urine leakages in the rear region 130. In particular, urine leakage is prevented along the rear transverse edge 117. Due to the curved elastic member 125, the rear leakage barrier 135 provides the rear region 130 with a basin-

shaped appearance allowing a part of the male genitals to be covered. In this context, and as schematically shown in Figure 2a, a basin-shaped appearance means that the curved elastic member 125 causes at least a portion of the rear region 130 to adopt a rear leakage barrier 135 which projects in the z-direction of the article 100. A curved elastic member 125 along the rear transverse edge 117 is essential for the invention since a homogenous contraction of the rear region 130 along the rear transverse edge 117 is obtained, which ensures an effective urine leakage barrier. Without being bound by any theory, the use of a curved elastic member is different from the use of a straight elastic member solely arranged along the transverse dividing line in the transverse direction. The difference is that a straight elastic member results in that both the front region 110 and rear region 130 are affected by the contraction. This is understood to be an undesired contraction of the article 100 for its specific purpose, and creates an unnecessary bulkiness. A straight elastic member also results in that the contraction of the rear region 130 is heterogeneous along the rear transverse edge 117.

By means of the curved elastic member 125, the adaptation of the shape of at least a portion of the rear region 130 ensures that protection against urine leakages is maintained on a sufficiently appropriate level for men suffering from post void dribbling. The rear leakage barrier 135 specifically ensures that liquid does not run out past the rear transverse edge 117 of the article 100. Furthermore, the invention makes it possible to utilize the absorption capacity of the article 100 at a maximum. This is due to the fact that the rear leakage barrier 135 acts as a rear positioned-barrier to collect and keep the urine on the body-surface of the article until it has been sufficiently absorbed. Hence, the article 100 can be produced with less absorbent material and super absorbents to avoid an unnecessary bulky article 100, which also reduces the manufacturing costs. The invention therefore provides the male user with an article 100 that is discrete and neat, and has improved leakage security against urine leakage. In addition, the rear leakage barrier 135 provides the user with an article 100 that is easy to position in relation to the body of user. That is, the positioning of the rear leakage barrier 135 facilitates for the user when the article 100 is to be put on, since the user easily can differentiate between the front and rear region 110, 130 of the article 100.

As explained above, the contraction of the curved elastic member 125 gives the rear region 130 a slightly upwardly curved configuration. The term "upwardly" in this context means a direction towards the user, i.e. normally in the z-direction. In Figure 2b a cross-sectional view of the article 100 according to Figure 1a is shown. As is evident from this figure the curving in the longitudinal direction y of the article 100 due to the contraction of the curved elastic member 125 occurs exclusively in the rear region 130. The elastic member 125 does not overlap with, or extend over, the front region 110. The front region 110 remains substantially planar in the z-direction. Hence, in another aspect of the invention, the front region 110 exclusively extends in the transverse x and the longitudinal y directions. This means that the volume of the article, i.e. the extension of the article in the thickness direction z, is kept as small as possible in order to provide the wearer with a discrete and neat article. In this aspect of the invention, the shape of the front region 110 is not affected by the contraction of the elastic member 125.

The pre-tension of the curved elastic member 125 shall be such that the rear leakage barrier 135 forms an angle α greater than 30 degrees with the x-y plane when the front region 110 of the article 100 is held in a horizontal position. The angle α is important for providing an article 100 that has an improved protection against leakage of small amounts of urine in the rear region 130. In addition to being a prerequisite for obtaining a desired leakage barrier, the angle α forms a rear leakage barrier 135 which indicates in a simple way to the user where the article 100 should be applied on the body of the user. This facilitates the application of the article 100. Accordingly, in another aspect of the invention, the rear leakage barrier 135 makes an angle α in the thickness direction z with the x-y plane of between 30° and 120°, preferably between 60° and 110°, more preferably between 80° and 100°. The value of angle α is dependent on the contractive forces of the pre-tensioned curved elastic member 125. The forces needed are thus dependent on the size of the article and the materials and thicknesses of the different layers of the article and can therefore not be easily defined. However, the angle α is well-suited to define the pre-tensioned needed. The angle α of the rear leakage barrier 135 is preferably adapted in such a manner that good contact between the body of the wearer and the article 100 is ensured during use.

Figure 2a is a three-dimensional view of the article 100 when the elastic member 125 has been allowed to contract after manufacture of the article 100. As is evident from Figure 2a and 2b, the rear region 130 of the article 100 has been raised above the remaining part thereof due to the contraction, i.e. a shortening of the elastic member 125. Furthermore, the configuration of article 100 is very well adapted to the male anatomy and the curvature of the article 100 also indicates clearly to the user where the article 100 should be located in relation to the body.

In the applied state of article 100, the elastic member 125 contributes to hold the rear region 130 of the article 100 against the body of the user between the buttocks of the user. The absorbent core 107 can therefore more easily deform to follow the shape of the buttocks.

The dimensions of the article can be governed by the expression $0.7 < A/B < 1.3$, preferably $0.8 < A/B < 1.2$, and more preferred $0.9 < A/B < 1.1$, where A is the maximum longitudinal extension of the article and B is the maximum transverse extension of the article. The longitudinal extension of the front region is preferably 50 - 90 %, more preferably 65 - 85 %, and most preferably 70 - 80 % of the longitudinal extension of the article 100.

The term "longitudinal centre line" refers to the imaginary line 40 centred between the longitudinal edges of the article, as illustrated in Figure 1a, and which is generally aligned with the vertical plane which bisects a standing wearer into left and right body halves. The length A of the article 100 is normally measured along the longitudinal centre line 40 of the article 100 and may be between 8 cm to 20 cm. The width B of the article is measured along a transversal line where the article has its maximum transverse extension. This may not necessarily be the transversal dividing line 30. The width B may be between 12 cm to 20 cm. All these dimensions are merely indicative and not limitative, because the normal dimensions of these and other types of male hygiene articles may differ, as is known in the art.

It is appreciated that the specific ratio between the longitudinal extension A of the article 100 and the transverse extension B of the article 100 results in a male hygiene article which leads to a comfortable fit of the article when the article is worn.

Without being bound by any theory, the above-mentioned ratio provides a satisfactory level of inconspicuousness and it is appreciated that the ratio provides an article that is particularly suitable for men demanding a high degree of discretion.

- 5 In yet another aspect of the invention, the transverse dividing line 30 constitutes a folding line 118 such that the elastic member 125 causes the rear region 130 to adopt a rear leakage barrier 135 in the thickness direction z along the folding line 118. By means of a folding line, the adoption of the rear leakage barrier along the transverse dividing line is improved.

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Herein, the expression "folding line" denotes an area of the article that has been mechanically or chemically treated so as to facilitate the adoption of the rear leakage barrier 135 along the transverse dividing line 30.

- 15 In a further aspect of the invention, which is schematically shown in Figure 3, the article 100 comprises a second elastic member 126 in addition to the first elastic member 125. The second elastic member 126 is arranged on the article 100 such that the first and second elastic members 125, 126 are exclusively localised within the rear region. The first and second elastic members 125, 126 preferably extend in a curved manner along the rear transverse edge 117. The second elastic member 126 has a third terminal point 127 and a fourth terminal point 128 on the transverse dividing line 30. As previously described for the first elastic member 125, the second elastic member 126 can be attached to one or both of the topsheet 115, backsheet 116 and/or absorbent core 107. The first and second elastic member 125, 126 can be attached to the article 100 with different tensions. By means of a second elastic member 126 an even more homogenous contraction of the rear region 130 is obtained. The use of a first and a second elastic member 125, 126 also allows the manufacturer of the article to apply two elastic members having different tension so as to obtain an optimal rear leakage barrier 135.

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The contraction of the curved elastic member 126 further contributes to give the rear region 130 a slightly upwardly curved configuration, i.e. in the z -direction. The curving in the longitudinal direction y of the article 100 due to the contraction of the curved first and second elastic members 125, 126 occurs exclusively in the rear

region 130. The elastic members 125, 126 do not overlap with, or extend over, the front region 110. The front region 110 remains substantially planar in the z-direction. Hence, in another aspect of the invention, the front region 110 exclusively extends in the transverse x and the longitudinal y directions. This means that the volume of the article, i.e. the extension of the article in the thickness direction z, is kept as small as possible in order to provide the wearer with a discrete and neat article. In this aspect of the invention, the shape of the front region 110 is not affected by the contraction of the elastic members 125, 126.

10 The pre-tension of the curved second elastic member 126 may be identical to the pre-tension of the first curved elastic member 125. The pre-tension of the second curved elastic member 126 may also be slightly different or very different to the pre-tension of the first curved elastic member 125. Nevertheless, as previously explained for the first elastic member 125, the pretension of the curved first and
15 second elastic member 125, 126 shall be such that the rear leakage barrier 135 forms an angle α . The characteristics and variations of the angle α , as previously explained, are equally applicable for the article 100 that has first and second elastic members 125, 126 as for an article that has only first elastic member 125.

20 In Figure 4, a three-dimensional view of a male hygiene article 100 according to the present invention is shown in a user-like configuration. From the drawing, it is apparent that the rear region of the article 100 has a basin-shaped appearance which allows a part of the male genitals to be covered. As indicated above, for example with reference to Figure 2a, the basin-shaped appearance is implemented
25 by means of the curved elastic member 125 (cf. Figure 2a) which causes at least a portion of the rear region to adopt a rear leakage barrier.

The male hygiene article 100 can be packaged individually, or in a pack module (such as a bag or a box) comprising several individual articles.

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The invention also extends to all conceivable combinations of the herein described illustrative embodiments. Accordingly, this invention is intended to embrace all such alternatives, modifications and variations which fall within the spirit and scope of the enclosed patent claims.

CLAIMS

1. A male hygiene article (100), said article (100) having a transverse (x), a longitudinal (y) and a thickness direction (z), said article (100) being divided by
5 a transverse dividing line (30) into a front region (110) with a front transverse edge (113) and a rear region (130) with a rear transverse edge (117), said article (100) comprising a body-facing surface (105) and a garment-facing surface (106), **characterized in that** at least one elastic member (125) being arranged on said article (100) such that it is exclusively localised within said
10 rear region (130), said elastic member (125) having a first terminal point (121) and a second terminal point (122) on said transverse dividing line (30), said elastic member (125) extending in a curved manner along said rear transverse edge (117) such that said elastic member (125) causes at least a portion of said rear region (130) to adopt a rear leakage barrier (135) in said thickness
15 direction (z) along said transverse dividing line (30).
2. A male hygiene article (100) according to any of the preceding claims, **further characterized in that** the rear leakage barrier (135) provides the rear region (130) with a basin-shaped appearance allowing a part of the male genitals to
20 be covered.
3. A male hygiene article (100) according to any of the preceding claims, **further characterized in that** said rear leakage barrier (135) makes an angle (α) in the thickness direction (z) with the x-y plane of between 30° and 120°, preferably between 60° and 110°, more preferably between 80° and 100°.
25
4. A male hygiene article (100) according to any of the preceding claims, **further characterized in that** said front region (110) exclusively extends in the transverse (x) and the longitudinal (y) directions.
30
5. A male hygiene article (100) according to any of the preceding claims, **further characterized in that** the dimensions of the article (100) are governed by the expression $0.7 < A/B < 1.3$, preferably $0.8 < A/B < 1.2$, and more preferred 0.9

$< A/B < 1.1$, where A is the longitudinal extension of the article (100) and B is the transverse extension of the article (100).

- 5 6. A male hygiene article (100) according to any of the preceding claims, **further characterized in that** the longitudinal extension of the front region (110) is preferably 50 - 90 %, more preferably 65 – 85 %, and most preferably 70 – 80 % of the longitudinal extension of said article (100).
- 10 7. A male hygiene article (100) according to any of the preceding claims, **further characterized in that** said transverse dividing line (30) constitutes a folding line (118) such that said elastic member (125) causes said rear region (130) to adopt a rear leakage barrier (135) in said thickness direction (z) along said folding line (118).
- 15 8. A male hygiene article (100) according to any of the preceding claims, **further characterized in that** the article (100) comprises a topsheet (115) and a backsheet (116).
- 20 9. A male hygiene article (100) according to claim 8, **further characterized in that** said elastic member (125) is attached to one of the topsheet (115) or backsheet (116).
- 25 10. A male hygiene article (100) according to claim 8 or claim 9, **further characterized in that** the article (100) comprises an absorbent core (107) enclosed between said topsheet (115) and said backsheet (116).
11. A male hygiene article (100) according to claim 10, **further characterized in that** said elastic member (125) is attached to said absorbent core (107).
- 30 12. A male hygiene article (100) according to any of the preceding claims, **further characterized in that** a second elastic member (126) being arranged on the article (100) such that said first and second elastic members (125), (126) are exclusively localised within said rear region (130).

13. A male hygiene article (100) according to claim 12, **further characterized in that** said second elastic member (126) having a third terminal point (127) and a fourth terminal point (128) on said transverse dividing line (30).
- 5 14. A male hygiene article (100) according to any of claims 12 or 13 **further characterized in that** said second elastic member (126) is attached to one of said topsheet (115), backsheet (116) or absorbent core (107).
- 10 15. A male hygiene article (100) according to any of claims 12, 13 or 14, **wherein** said first and second elastic members (125), (126) are attached to the article (100) with different tensions.

AMENDED CLAIMS

received by the International Bureau on 12 May 2011 (12.05.2011).

1. A male hygiene article (100), said article (100) having a transverse (x), a longitudinal (y) and a thickness direction (z), said article (100) being divided by a transverse dividing line (30) into a front region (110) with a front transverse edge (113) and a rear region (130) with a rear transverse edge (117), said article (100) comprising a body-facing surface (105) and a garment-facing surface (106), **characterized in that** at least one elastic member (125) being arranged on said article (100) such that it is exclusively localised within said rear region (130), said elastic member (125) having a first terminal point (121) and a second terminal point (122) on said transverse dividing line (30), said elastic member (125) extending in a curved manner along said rear transverse edge (117) such that said elastic member (125) causes at least a portion of said rear region (130) to adopt a rear leakage barrier (135) in said thickness direction (z) along said transverse dividing line (30).
2. A male hygiene article (100) according to claim1, **further characterized in that** the rear leakage barrier (135) provides the rear region (130) with a basin-shaped appearance allowing a part of the male genitals to be covered.
3. A male hygiene article (100) according to any of the preceding claims, **further characterized in that** said rear leakage barrier (135) makes an angle (α) in the thickness direction (z) with the x-y plane of between 30° and 120° , preferably between 60° and 110° , more preferably between 80° and 100° .
4. A male hygiene article (100) according to any of the preceding claims, further characterized in that the elastic member (125) is positioned such that the shape of said front region (110) is not affected by the contraction of the elastic member (125).
5. A male hygiene article (100) according to any of the preceding claims, **further characterized in that** the dimensions of the article (100) are governed by the expression $0.7 < A/B < 1.3$, preferably $0.8 < A/B < 1.2$, and more preferred $0.9 < A/B < 1.1$, where A is the longitudinal extension of the article (100) and B is the transverse extension of the article (100).

6. A male hygiene article (100) according to any of the preceding claims, **further characterized in that** the longitudinal extension of the front region (110) is preferably 50 - 90 %, more preferably 65 – 85 %, and most preferably 70 – 80 % of the longitudinal extension of said article (100).
7. A male hygiene article (100) according to any of the preceding claims, **further characterized in that** said transverse dividing line (30) constitutes a folding line (118) such that said elastic member (125) causes said rear region (130) to adopt a rear leakage barrier (135) in said thickness direction (z) along said folding line (118).
8. A male hygiene article (100) according to any of the preceding claims, **further characterized in that** the article (100) comprises a topsheet (115) and a backsheet (116).
9. A male hygiene article (100) according to claim 8, **further characterized in that** said elastic member (125) is attached to one of the topsheet (115) or backsheet (116).
10. A male hygiene article (100) according to claim 8 or claim 9, **further characterized in that** the article (100) comprises an absorbent core (107) enclosed between said topsheet (115) and said backsheet (116).
11. A male hygiene article (100) according to claim 10, **further characterized in that** said elastic member (125) is attached to said absorbent core (107).
12. A male hygiene article (100) according to any of the preceding claims, **further characterized in that** a second elastic member (126) being arranged on the article (100) such that said first and second elastic members (125), (126) are exclusively localised within said rear region (130).

13. A male hygiene article (100) according to claim 12, **further characterized in that** said second elastic member (126) having a third terminal point (127) and a fourth terminal point (128) on said transverse dividing line (30).
- 5 14. A male hygiene article (100) according to any of claims 12 or 13 **further characterized in that** said second elastic member (126) is attached to one of said topsheet (115), backsheet (116) or absorbent core (107).
- 10 15. A male hygiene article (100) according to any of claims 12, 13 or 14, **wherein** said first and second elastic members (125), (126) are attached to the article (100) with different tensions.

Fig. 1 a

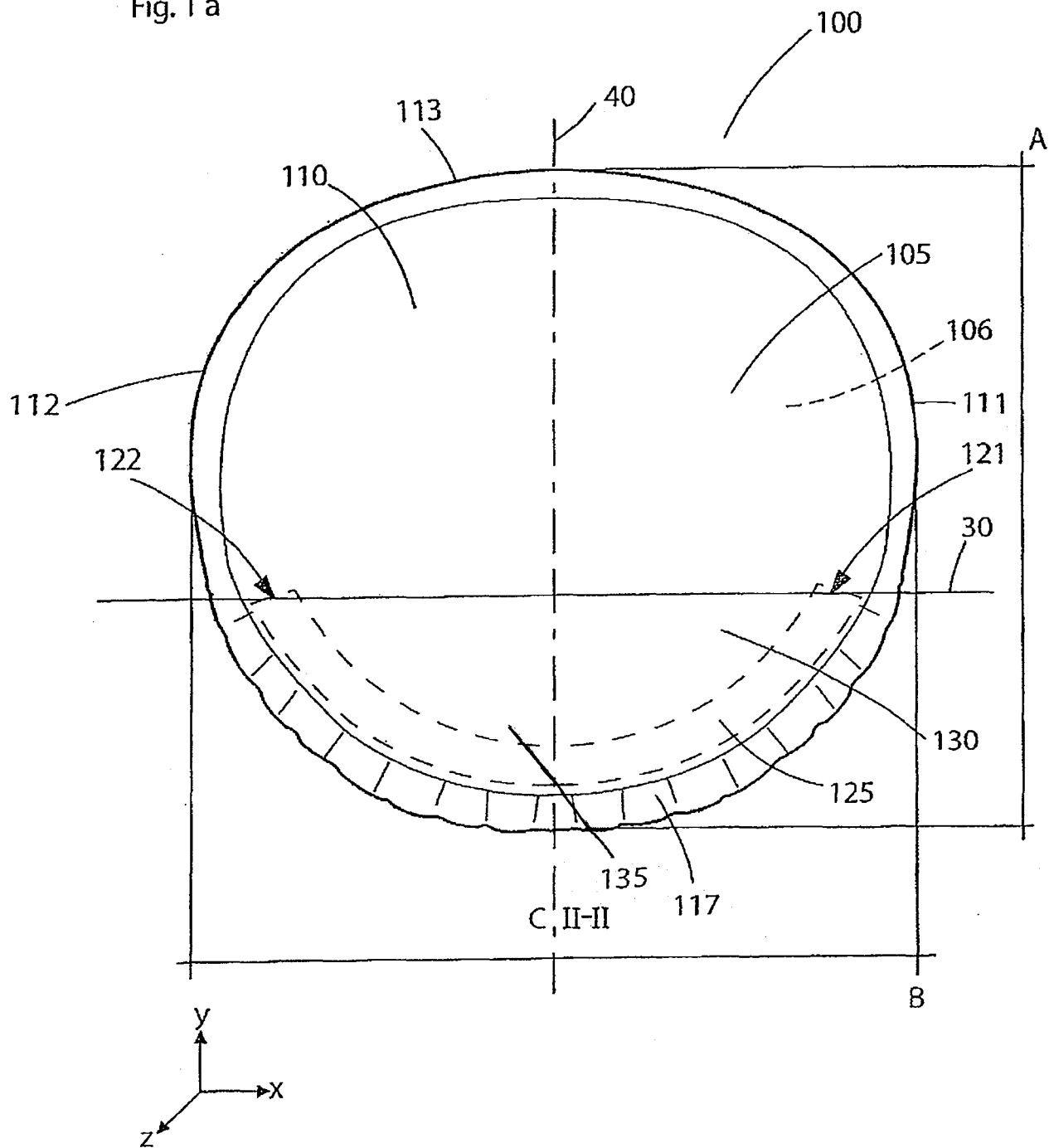


Fig. 1 b

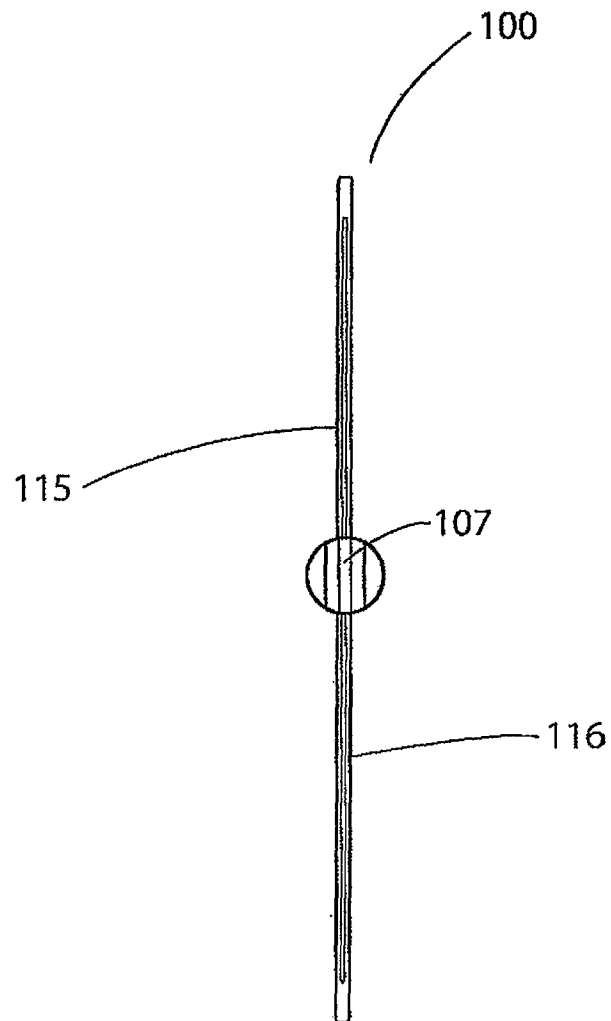


Fig. 2 a

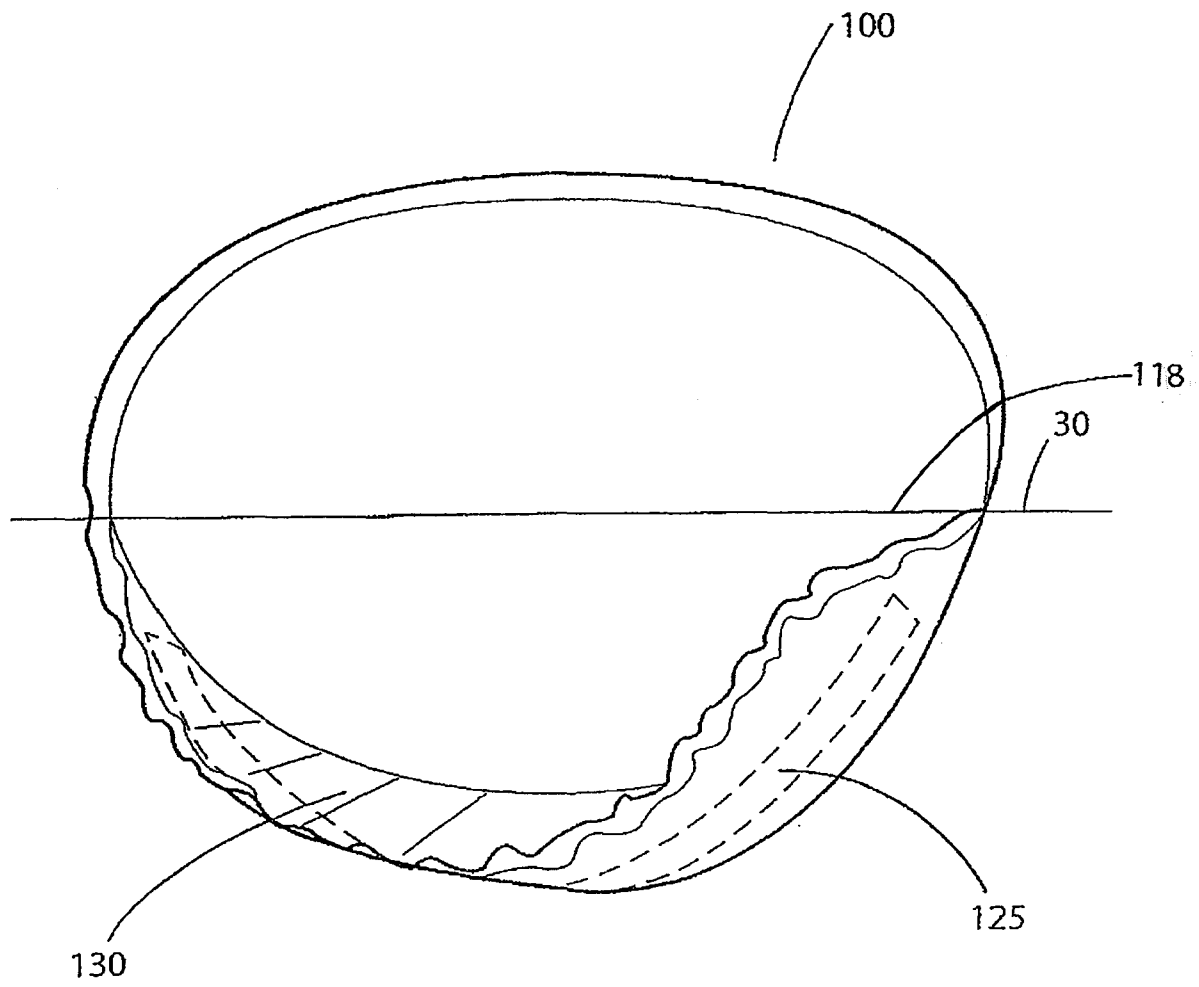


Fig. 2 b

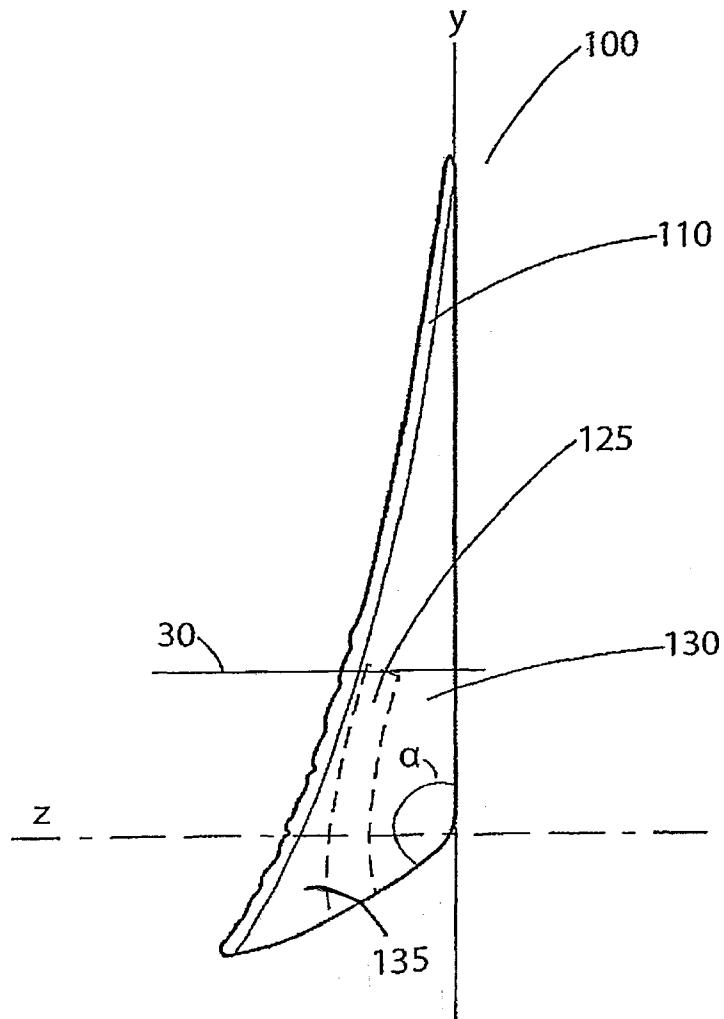


Fig. 3a

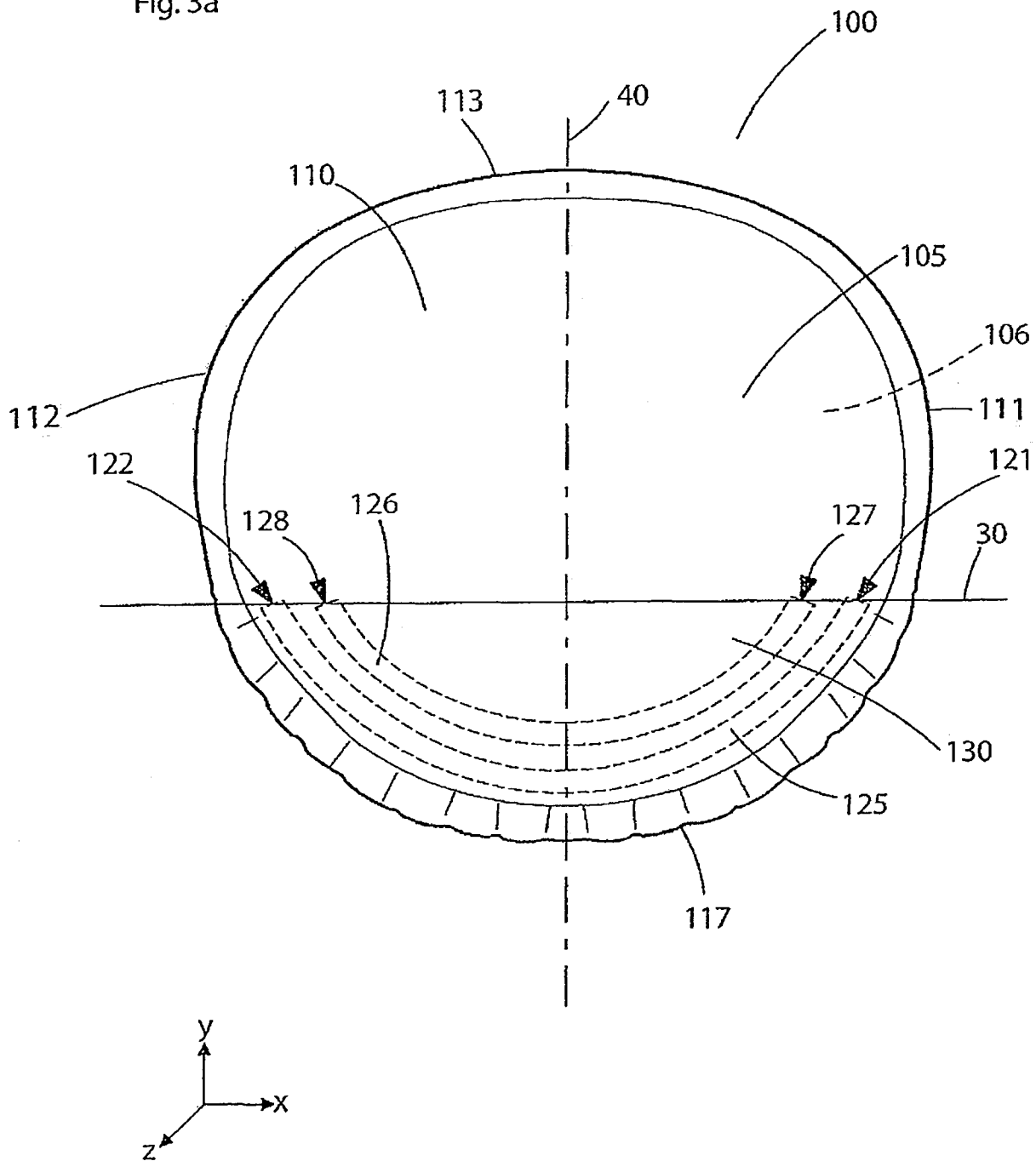


Fig. 3 b

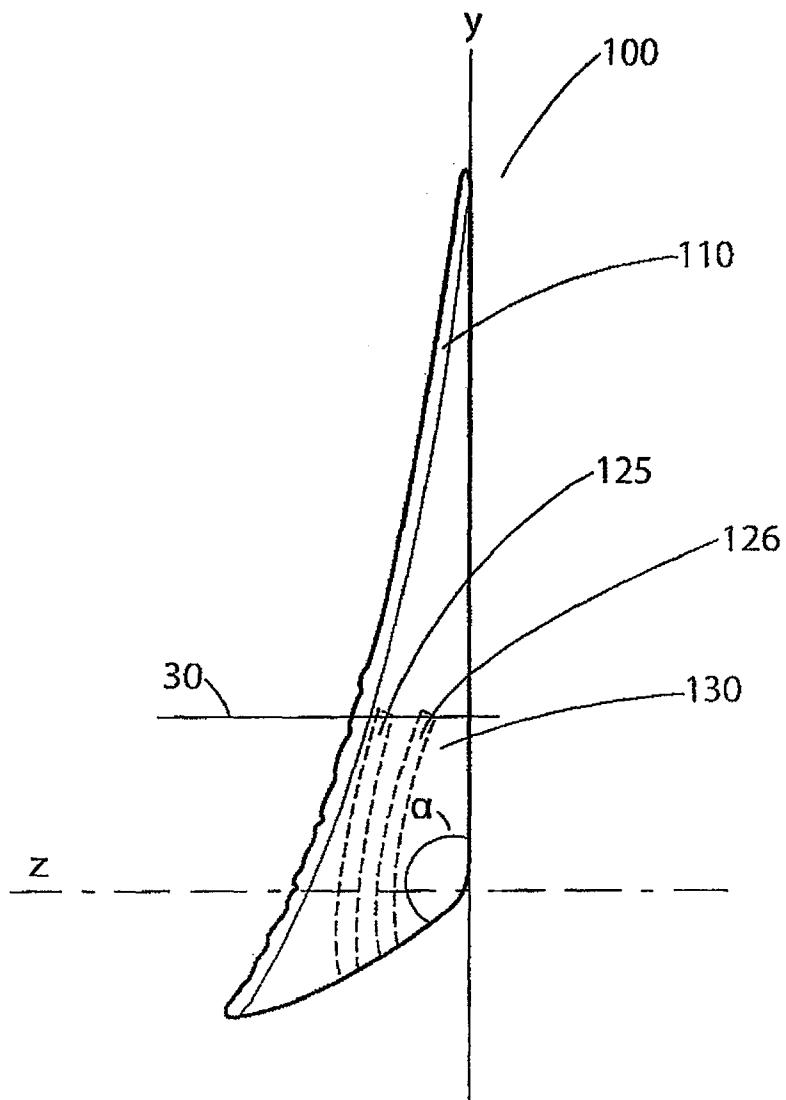
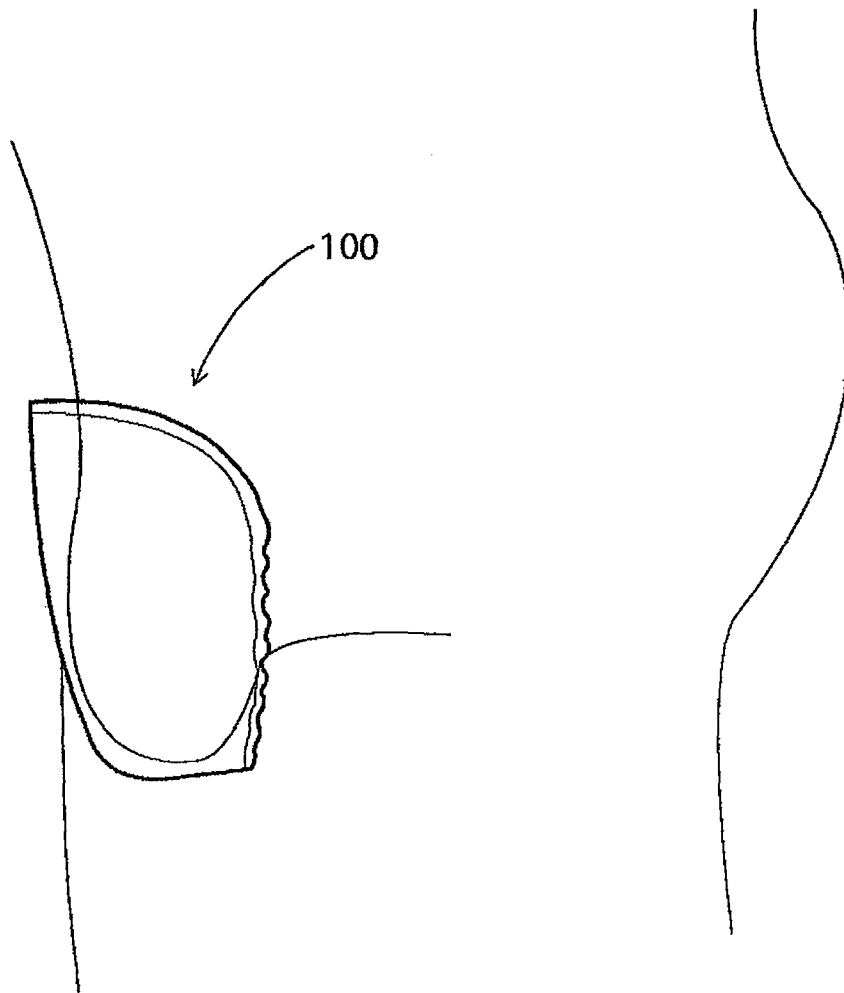


Fig. 4



INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE2010/050501

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 8606620 A1 (MÖLNLYCKE AB), 20 November 1986 (20.11.1986), page 3, line 4 - line 7; page 4, line 9 - line 13; page 7, line 10 - line 25, figures 1-7, abstract --	1-15
Y	GB 2304586 A (SCA MÖLNLYCKE AB), 26 March 1997 (26.03.1997), page 5, line 34 - page 6, line 4; page 16, line 30 - page 17, line 13; page 26, line 31 - page 27, line 15, figures 1-2 --	1-15
A	US 5702381 A (COTTENDEN), 30 December 1997 (30.12.1997), column 3, line 19 - line 41, claims 1,15, abstract --	1-15

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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Date of the actual completion of the international search

23 December 2010

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE2010/050501

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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A	US 5651778 A (MELIUS ET AL), 29 July 1997 (29.07.1997), abstract --	1-15
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A	GB 2165755 A (VERNON-CARUS LIMITED), 23 April 1986 (23.04.1986), figure 1, abstract --	1-15
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A	WO 2004004617 A1 (SCA HYGIENE PRODUCTS AB), 15 January 2004 (15.01.2004), page 3, line 22 - line 28, figures 6,12, claim 1, abstract -- -----	1-15

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/SE2010/050501

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				JP	2005534362	T	17/11/2005
				MX	PA05000035	A	08/04/2005