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(54) **A method for making an elasticised pants article for persons suffering from incontinence and the pants made thereby**

Verfahren zur Herstellung einer elastischen Unterhose für an Inkontinenz leidende Personen und nach diesem Verfahren hergestellte Unterhose

Procédé pour la fabrication d'un slip élastique pour des personnes souffrant d'incontinence et slip obtenu selon ce procédé

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Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a method for making an elasticised pants article for persons suffering from incontinence.

[0002] The invention further relates to an elasticised pants article specifically designed for persons suffering from incontinence.

[0003] As is known, persons suffering from incontinence require undergarment articles of particular types, adapted to receive therein pads or napkins or diapers.

[0004] These requirements, however, must be met while providing a good comfort for the user.

[0005] Incontinence pants made of tubular fabric materials are already known (see for example EP 0 407 100 A).

[0006] From the mentioned tubular fabric material, for making the pants, is conventionally removed a fabric portion from the center of one of the open ends of the fabric tube.

[0007] Then, the fabric material is closed about the fabric removal portion, thereby providing the pants crotch and inner areas for the legs, while leaving openings on both sides of the crotch region, to provide suitable openings for the user legs.

[0008] While the pants articles made by the above disclosed prior method solve the indicated technical problem, they, however, are affected by the following disadvantages.

[0009] Usually, the ratio between the waist size and the leg tubular opening is not suitable for fitting to large size persons.

[0010] This situation, in particular, is a direct consequence of the pants making method which, even if the pants size changes, always provide a pants article having fixed and unsuitable size ratios of the several pants openings.

[0011] Accordingly, such a pants article has a very poor comfort, which is further decreased as the used pad or napkin is loaded by moisture, because of a great pressing toward the user body to which these elements are subjected during the use.

[0012] Finally, a further loss of comfort derives from an actual difficulty of properly firmly locating the mentioned napkins and/or pads, which would tend to be displaced because of the user body movements, with a negative consequence for the user of these prior pants articles.

SUMMARY OF THE INVENTION

[0013] Accordingly, the aim of the present invention is to provide a method for making an elasticised pants article for persons suffering from incontinence which comprises very simple operating steps and which can be carried out at a low cost.

[0014] Within the scope of the above mentioned aim, a main object of the present invention is to provide such an incontinence pants article which provides the user with a very high comfort in each condition of use thereof.

[0015] According to one aspect of the present invention, the above aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by the subject method for making an elasticised pants article for persons suffering from incontinence comprising the steps of knitting, by a circular loom, a tubular fabric element, removing a portion of the fabric from said tubular fabric element and seaming said tubular element near the fabric removal zones thereof, characterized in that said tubular fabric element is knitted with a homogeneous knitted construction of a 1-to-1 knitting type, said fabric being removed at two opposite portions of said tubular fabric element, so that a front and rear portions of said tubular fabric element are equal to one another and that said seaming step is carried out to provide a seam free of any cuff upturned portions.

[0016] Thus, by carrying out the above method, a pants article is provided having a homogeneous knitted fabric construction of the 1:1 knitted arrangement, with an even diameter, not curved sides and a front and rear regions perfectly equal to one another.

[0017] The present invention further relates to an incontinence elasticised pants article, characterized in that said pants article comprises a knitted fabric having a homogeneous 1:1 knitted construction, a crotch and two openings made by removing equivalent fabric portions at two opposite portions, and by a subsequent seaming operation, to provide substantially rectilinear sides and a front and rear zones perfectly equal to one another.

[0018] The invention provides the following advantages with respect to the prior art status.

[0019] In particular, the inventive pants article is provided with very good structural features, providing the pants article with a very high comfort and allowing it to be made at a very low cost.

[0020] Moreover, the elasticised fabric forming the pants article, jointly with the making method thereof, provide the pants article with greatly resilient features, both in a vertical and in a horizontal direction.

[0021] Moreover, the insertion, by portions, into the pants article of one or more uncoated elastomeric material threads will improve the resilient characteristics of the pants articles at set portions thereof.

[0022] In fact, the mentioned elastomeric material threads will provide a perfect adhesion of the pants article to the user body, while providing an additional resilient pulling effect.

[0023] At said uncoated elastomeric material threads, for example a Lycra® material or the like, the pants article fabric is also provided with even knitted portions perfectly corresponding to those of the remaining part of the pants body.

[0024] Furthermore, the mentioned resilient threads

will assure a perfect adhesion of the pads or diapers used by persons suffering from incontinence.

[0025] In addition, the ratios of the pants article openings would be optimized for a broad range of user's size: in particular, the diameter of the pants article waist portion would be less than that of the pants article user, the size are not curved and the rear and front portions are perfectly equal to one another.

[0026] Finally, the apparatus for carrying out the subject method can be easily available as well as the used materials, thereby the making cost will be very small.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027] Further advantages and characteristics of the present invention will become more apparent hereinafter from the following detailed disclosure, given by way of an illustrative but not limitative example, with reference to the accompanying drawings, where:

Figure 1 is an enlarged horizontal view of a fabric portion made for preparing the pants article according to the present invention;

Figure 2 is a perspective view showing a tubular fabric element, made by a circular loom, according to an intermediate step of the method for making the pants article according to the present invention;

Figure 3 is a further perspective view of the pants article made by the method according to the invention;

and

Figure 4 is a side view of the pants article according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0028] With reference to the number references of the figures of the accompanying drawings, the method for making an improved elasticised pants article for persons suffering from incontinence according to the invention comprises, at first, a knitting step.

[0029] This knitting step, in particular, is carried out on a circular loom, of any known suitable types, to which is fed an elasticised synthetic yarn or thread, preferably a polyamide type of yarn.

[0030] Thus, from said circular loom, a tubular fabric element 2 will be provided, the fabric construction whereof comprises homogeneous loops 3, preferably of a 1:1 knitted type, to provide said knitted fabric with greatly resilient features, both in a vertical and in a horizontal direction.

[0031] Moreover, to provide the pants article 1 with a greater elasticity at set regions thereof, one or more uncoated elastomeric material threads or yarns 4 are inserted, by portions, into the fabric being made during said knitting step.

[0032] The uncoated elastomeric material, for example, can comprise a Lycra® material or the like.

[0033] In this connection it should be pointed out that, advantageously, said elastomeric material yarns will be processed by said circular loom to provide, together with the mentioned synthetic thread, even loops perfectly corresponding to those provided in the remaining part of the pants article 1 body.

[0034] The thus made tubular element 2 is then subjected, at one end thereof, to a removal step for removing equivalent fabric portions therefrom, at two opposite portions of said tubular element 2.

[0035] Then, about the fabric removal zones is carried out a seaming operation, without any cuff upturned portions, in order to provide the crotch 5 and, accordingly, the leg openings 6.

[0036] Then, the pants article 1 is finished by any suitable cutting-seaming prior machines.

[0037] The finished pants article 1, in particular, will have an even diameter, and the pants article size will be set to provide a waist portion less than that of the user.

[0038] More specifically, the pants article sides 7 are not curved and the front and rear portions or flaps 8 are perfectly equal to one another.

[0039] In this connection, it should be apparent that all the disclosed making details can be replaced by other technically equivalent elements: accordingly, the used apparatus and materials, as well as the contingent size and shapes, can be suitably changed, depending on requirements.

[0040] The pants article 1 according to the present invention will be used like a prior pants article, while providing a much greater use comfort owing to a perfect adhesion of the subject pants article to the user body, due to the return resilient forces which are generated by the vertical and horizontal tension of the subject pants article during its use.

[0041] In particular, the mentioned resilient forces will be enhanced by the above mentioned elastomeric material threads 4.

[0042] As stated, said resilient forces will provide a very good comfort even upon moistening of the pad or napkin held in the pants article, owing to a perfect adhesion of the latter.

[0043] From the above disclosure it should be apparent that the invention fully achieves the intended aim and objects.

Claims

1. A method for making an elasticised pants article (1) for persons suffering from incontinence comprising the steps of knitting, by a circular loom, a tubular fabric element (2) comprising a synthetic yarn, removing two opposite end portions of the fabric from said tubular fabric element and seaming said tubular element near the fabric removal portions thereof,

characterized in that said tubular fabric element (1) is knitted with a homogeneous knitted construction of a 1-to-1 knitting type, that a front and rear portions of said tubular fabric element (2) are equal to one another, that said seaming is carried out to provide a seam free of any cuff upturned portions, and that said knitting step provides for using one or more uncoated elastomeric material threads (4), said elastomeric material threads (4) being knitted by said circular loom to provide, together with the synthetic fabric material, even loops which perfectly correspond to the loops made by the synthetic yarn material.

2. A method according to Claim 1, **characterized in that** said knitting step is carried out by using a polyamide type of yarn.
3. A method according to Claims 1 and 2, **characterized in that** said seaming step is designed for providing, after said fabric portion removal step, a two-opening crotch region (5), the pants article being finished by a cutting-seaming apparatus.
4. An elasticised pants article for persons suffering from incontinence, made by the method according to one or more of the preceding claims, **characterized in that** said pants article (1) comprises a homogeneously knitted fabric with a 1:1 knitting pattern, including a crotch region (5) and two seamed leg openings (6), the seam being free of any cuff upturned portions, said article having substantially rectilinear sides (7) and a front and rear zones (8) perfectly equal to one another, and said knitted fabric material comprising a synthetic yarn and one or more uncoated elastomeric material yarns (4), providing, together with said synthetic yarn material, even loops corresponding to the loops provided by said synthetic yarn material.
5. An elasticised pants article according to Claim 4, **characterized in that** said knitted fabric material comprises a polyamide type of synthetic yarn.

Patentansprüche

1. Verfahren zur Herstellung einer elastischen Unterhose (1) für an Inkontinenz leidende Personen, welches die Schritte des Wirkens eines röhrenförmigen Gewebeelements (2), welches ein synthetisches Garn aufweist, mittels einer Rundwebmaschine, des Entfernens zweier entgegengesetzter Endbereiche des Gewebes von dem röhrenförmigen Gewebeelement und des Säumens des röhrenförmigen Elements nahe der Gewebeentfernungsbereiche desselben aufweist, **dadurch gekennzeichnet, dass**

das röhrenförmige Gewebeelement (1) mit einer einheitlichen Wirktechnik in einer 1-zu-1-Wirkauführung gewirkt wird, dass ein Vorderseiten- und Rückseitenbereich des röhrenförmigen Gewebeelements (2) gleich zueinander sind, dass das Säumen durchgeführt wird, um einen Saum frei von irgendwelchen umgeschlagenen Bereichen vorzusehen, und dass der Wirkschritt ein oder mehrere unbeschichtete, aus elastomerem Material bestehende Fäden (4) zur Nutzung vorsieht, wobei die aus elastomerem Material bestehenden Fäden (4) mittels der Rundwirkmaschine gewirkt werden, um zusammen mit dem synthetischen Gewebematerial gleichmäßige Schlingen zu bilden, welche vollkommen den durch das synthetische Garnmaterial erzeugten Schlingen entsprechen.

2. Verfahren gemäß Anspruch 1, **dadurch gekennzeichnet, dass** der Wirkschritt unter Verwendung eines Garns vom Polyamidtyp durchgeführt wird.
3. Verfahren gemäß der Ansprüche 1 und 2, **dadurch gekennzeichnet, dass** der Säumschritt dafür vorgesehen ist, nach dem Gewebebereichsentfernungsschritt einen Schrittbereich mit zwei Öffnungen (5) zu schaffen, wobei die Unterhose mittels einer Schneid-Säumeinrichtung fertiggestellt wird.
4. Elastische Unterhose für an Inkontinenz leidende Personen, hergestellt durch das Verfahren gemäß einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Unterhose (1) ein einheitliches Wirkgewebe mit einem 1:1-Wirkmuster einschließlich eines Schrittbereichs (5) und zwei gesäumten Beinöffnungen (6) aufweist, wobei der Saum frei von irgendwelchen umgeschlagenen Bereichen ist, wobei die Unterhose weitgehend geradlinige Seiten (7) und eine vollkommen zueinander gleiche kommen zueinander gleiche Vorderseiten- und Rückseitenzone (8) aufweist, und wobei das gewirkte Gewebematerial synthetisches Garn und ein oder mehrere unbeschichtete, aus einem elastomeren Material bestehende Fäden (4) aufweist, welche zusammen mit dem synthetischen Garnmaterial gleichmäßige Schlingen vorsehen, welche den durch synthetisches Garnmaterial vorgesehenen Schlingen entsprechen.
5. Elastische Unterhose gemäß Anspruch 4, **dadurch gekennzeichnet, dass** das gewirkte Gewebematerial ein synthetisches Garn vom Polyamidtyp aufweist.

Revendications

tissu à mailles comprend des fibres synthétiques de type polyamide.

1. Procédé de fabrication d'un article élastique de type pantalon (1) destiné aux personnes souffrant d'incontinence comprenant les étapes de tricotage, par une boucle circulaire, d'un élément tubulaire (2) en tissu comprenant des fibres synthétiques, d'enlèvement de deux parties opposées d'extrémité dudit tissu tubulaire et de couture dudit élément tubulaire à proximité des parties de tissu à enlever de celui-ci, **caractérisé en ce que** ledit élément tubulaire (1) en tissu est tricoté avec une structure homogène à mailles de type de maillage 1-à-1, **en ce que** les parties avant et arrière dudit élément tubulaire (2) en tissu sont égales l'une par rapport à l'autre, **en ce que** ladite couture est effectuée pour fournir une couture libre de toute partie retournée à revers (« cuff upturned portions »), et **en ce que** ladite étape de tricotage est étudiée pour utiliser un ou plusieurs fils en matériau élastomère (4), lesdits fils en matériau élastomère (4) étant tricotés par lesdites boucles circulaires afin de fournir, avec ledit matériau de tissu synthétique, les mêmes boucles correspondant parfaitement aux boucles créées par le matériau de fibres synthétiques. 5
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2. Procédé selon la revendication 1, **caractérisé en ce que** ladite étape de tricotage est effectuée en utilisant des fibres de type polyamide. 30
3. Procédé selon les revendications 1 et 2, **caractérisé en ce que** ladite étape de couture est étudiée pour fournir, après ladite étape d'enlèvement des parties en tissu, une région de type crochet (5) à deux ouvertures, l'article de type pantalon étant finalisée par un dispositif de découpage-couture. 35
4. Article de type pantalon élastique pour des personnes souffrant d'incontinence, fabriqué par le procédé selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ledit article de type pantalon (1) comprend un tissu homogène tricoté avec un modèle de tricotage 1-à-1, incluant une région de type crochet (5) et deux ouvertures (6) cousues pour les jambes, la couture étant libre de toute partie retournée à revers, ledit article possédant des côtés sensiblement rectilignes (7) et des zones avant et arrière (8) parfaitement égales l'une à l'autre, et **en ce que** ledit matériau en tissu à mailles comprend une fibre synthétique et une ou plusieurs fibres (4) en matériau élastomère non recouvert, fournissant, avec ledit matériau de fibres synthétiques, les mêmes boucles correspondant aux boucles fournies par ledit matériau de fibres synthétiques. 40
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5. Article de type pantalon élastique selon la revendication 4, **caractérisé en ce que** ledit matériau en

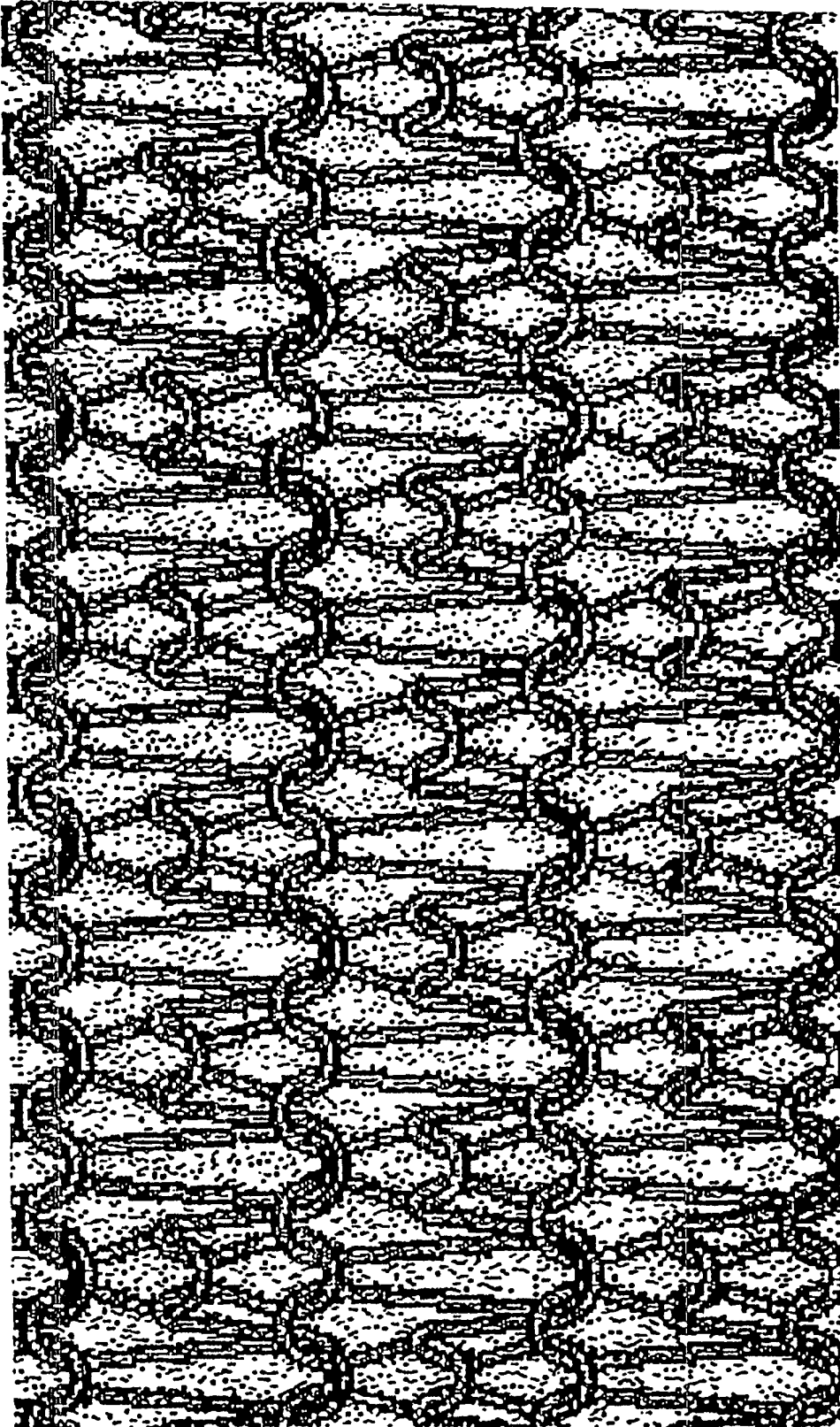


FIG. 1

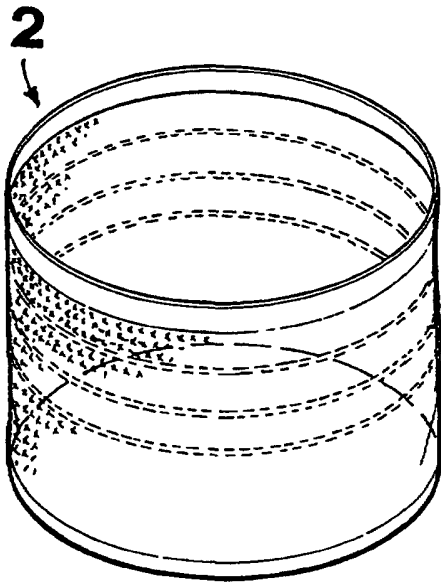


FIG. 2

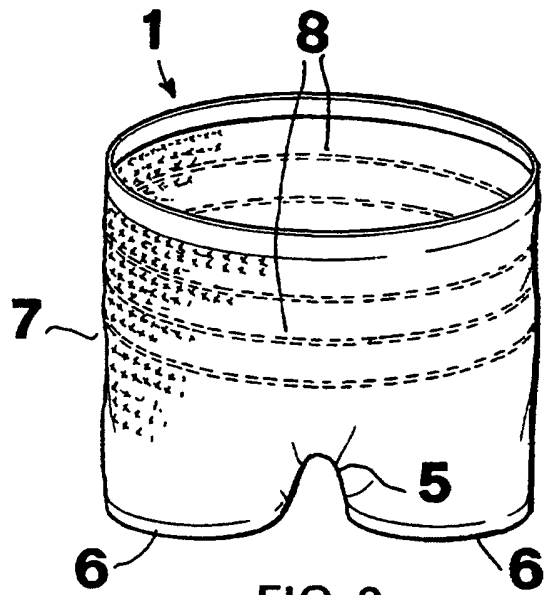


FIG. 3



FIG. 4