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(54) **MULTIFUNCTIONAL PIECES OF CLOTHING**

MULTIFUNKTIONSKLEIDUNGSSTÜCKE

PIÈCES VESTIMENTAIRES MULTIFONCTION

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EP 2 400 865 B1

Description

[0001] The present invention relates to the clothing sector and more in particular to a new concept for designing clothes, or in general pieces of clothing with variable style.

[0002] In the field of clothing there is a continuous research for technical-functional and aesthetical measures for obtaining clothes with new fit features and particular aesthetic and functional effects.

[0003] According to one aspect, the object of the present invention is to provide a new structure of clothing that allows, with limited production costs, to obtain clothes with particular features in terms of fit and convenience of use.

[0004] Substantially, the invention provides for the production of a piece of clothing comprising at least one portion of tubular fabric and elements that allow the piece of clothing to be worn in different manners, based upon the way in which said elements and the portion of tubular fabric engage to the body, according to claim 1.

[0005] In some embodiments, the piece of clothing can be produced in a knitted fabric. Preferably, although not necessarily, the piece of clothing is elastic and more preferably it is bi-elastic, although this is not strictly necessary. For example, the piece of clothing can be produced in Lycra®. In other embodiments, it is possible to use a woven fabric, i.e. an orthogonal fabric, a nonwoven fabric, a cloth or other. In the framework of the present description and of the attached claims, if not otherwise specified, "fabric" is intended in general as a textile product in, woven or nonwoven, natural, synthetic, artificial or mixed fibers, obtained through any production technique.

[0006] Document US 4062062 discloses a piece of clothing according to the preamble of claim 1. According to the present invention, a clothing or piece of clothing is provided that comprises a structure of tubular fabric with two open ends and with two pairs of apertures or slits transverse relative to the development of the tubular fabric, the transverse apertures of each pair being about mutually opposite, in the same position relative to the ends of said structure of tubular fabric.

[0007] The two pairs of apertures can be arranged at distances equal to or preferably different from each other with respect to the two ends of the tubular structure.

[0008] Further advantageous embodiments of pieces of clothing according to the present invention, as well as some of the possibilities for wearing these pieces of clothing are described hereunder with reference to some non limiting example of the invention.

Brief description of the drawings

[0009] The invention will be better understood by following the description and the attached drawings, which show practical non-limiting embodiments of the invention and some of the possible uses thereof. In particular, in the drawings:

figure 1 shows a schematic view of a clothing according to the present invention in a first embodiment;
figures 2A, 2B, 2C show a first method of use of the clothing of figure 1;
figures 3A, 3B, 3C show a second method of use of the clothing of figure 1;
figure 4 shows a third method of use of the clothing of figure 1;
figures 5 and 6 show a fourth method of use of the clothing of figure 1;
figure 7 shows a fifth method of use of the clothing of figure 1;
figures 8A, 8B, 8C show two schematic plan views and one schematic perspective view of a second embodiment of a clothing;
figures 9 and 10 show a first method of use of the clothing of figures 8A - 8C;
figure 11 shows a second method of use of the clothing of figures 8A -8C;
figures 12 and 13 show a third method of use of the clothing of figures 8A - 8C;
figure 14 shows a fourth method of use of the clothing of figures 8A - 8C;
figure 15A, 15B, 15C show a fifth method of use of the clothing of figures 8A - 8C;
figures 16A, 16B show a sixth method of use of the clothing of figures 8A - 8C;
figure 17 shows a schematic plan view of a clothing in a third embodiment;
figure 18 shows a first method of use of the clothing of figure 17;
figures 19A and 19B show a second method of use of the clothing of figure 17;
figure 20 shows a diagram of the cutting process for cutting some clothes according to the invention, starting from a textile tubular structure; and
figure 21 shows a section according to XXI-XXI of figure 20.

Detailed description of embodiments of the invention

Embodiment of the figures 1 to 7

[0010] A first embodiment of the invention provides for a clothing schematically shown in figure 1 in its approximately flattened arrangement and indicated as a whole with the number 1. In this case, the clothing has a textile structure, i.e. a structure in tubular fabric 3 with a first end 3A and a second end 3B. The tubular structure 3 can be in knitted fabric, for example in Lycra®, and preferably with a bi-elastic feature, i.e. a feature that allows elastic elongation of the article both in longitudinal direction L and in transversal direction T.

[0011] According to some embodiments, the tubular structure 3 can be realized for example in one piece by means of a circular knitting machine with adequate diameter. In other embodiments, the tubular structure 3

can be obtained from a piece of fabric sewn along a line substantially parallel to the axis A-A of the tubular structure 3.

[0012] In two intermediate positions, the clothing has two pairs of slits 5A, 6A and 5B, 6B. The slits or apertures 5A, 6A, 5B, 6B extend transversally relative to the longitudinal axis A-A of the tubular structure 3. Preferably, the slits 5A, 6A are at a distance L1 from the end 3A of the tubular structure 3, which is different from (in this case lower than) the distance L2 between the slits or apertures 5B, 6B and the end 3B. This asymmetrical arrangement facilitates wearing the clothing in the various ways in which it can be used.

[0013] As shown in figure 1, the apertures 5A, 6A are opposite to each other and they are therefore in substantially mirror - like positions relative to a plane containing the axis A-A of the tubular structure 3, on a first half of the tubular structure 3. On the second half of the tubular structure 3 are arranged the apertures or slits 5B, 6B, opposite to each other in an arrangement substantially symmetrical relative to a plane containing the axis A-A. These apertures or slits 5A, 6A, 5B, 6B can be obtained simply through cut of the fabric, and they can have an edge finished by means of a stitching or in any other manner so as to prevent the fabric itself from laddering. It is also possible for these apertures to be obtained with an adequate control of the operating needles of a knitting machine, which produces the tubular structure 3. In some embodiments, the whole structure can be obtained through laser cut of a tubular of high length, as it will be better described hereunder.

[0014] The simple clothing 1 shown in figure 1 is extremely versatile, and it can be worn in a plurality of different ways, some of which are shown in figures 2 to 7.

[0015] More in particular, in figures 2A, 2B, 2C a first method of use of the clothing 1 is shown. In this case, the clothing is worn by introducing the arms across the pair of apertures or slits 5A, 6A, and 5B, 6B, in such a way that the portion of tubular fabric which is between these two pairs of slits or apertures rests on the front part of the bust. The portions of fabric which are between the slits or apertures 5A, 6A, and the end 3A and between the slits or apertures 5B, 6B and the end 3B are folded, so as to criss-cross at the back (figure 2C), and are connected to each other, for example by means of a pin or in other suitable manner, at the front, about at correspondence of the pelvis (figure 2B).

[0016] Figures 3A, 3B, 3C show a second way for wearing the clothing 1 of figure 1. In this case the clothing is worn once again by inserting the arms through the pairs of slits 5A, 6A, and 5B, 6B respectively, but maintaining the central portion of the fabric, i.e. the portion between the two pairs of apertures 5A, 6A, and 5B, 6B, on the back. The two segments or portions of fabric, which develop between the pairs of apertures 5A, 6A, and 5B, 6B and the ends 3A, 3B are criss-crossed at the front and connected to each other, for example by means of a pin, in an adequate position substantially at the height of the abdomen, as shown in figures 3A, 3C.

[0017] Figure 4 shows, in two 3/4 perspective views from the front and from the back, a further way for wearing the clothing 1 of figure 1, analogous to that illustrated in figures 3A, 3B, 3C, but wherein the most external portions of the tubular structure 3 are pulled and connected to each other, again by means of a pin or in other suitable way, about at correspondence of the backside instead of the abdomen as in figures 3A - 3C.

[0018] Figures 5 and 6 show two alternative ways for wearing the clothing of figure 1 in such a manner that it constitutes, instead of a sort of shirt (i.e. a piece of clothing limited to the upper portion of the body), a dress extending from the shoulders to the calf or the ankle of the user.

[0019] In figure 5, the clothing is worn by making the head, a shoulder and an arm (in the figure the left arm and the left shoulder) pass across the aperture at the end 3B of the clothing, whilst the other arm (the right arm in the figure) passes across one of the two apertures or slits 5B, 6B. The other of the two apertures 6B or 5B is in the portion of fabric below the left armpit. The apertures 5A, 6A are positioned on the flanks of the wearer, whose legs exit from the clothing through the end aperture 3A.

[0020] Figure 6 shows a further way of using the piece of clothing of figure 1, again in the shape of a long dress. In this case, the clothing is worn as a so-called sheath dress, with the legs exiting from the end 3A (or 3B) and the shoulders and the head across the opposite end 3B (or 3A). The arms pass across two mutually opposite slits 5A, 6A or 5B, 6B, whilst the other pair of slits 5B, 6B or 5A, 6A is positioned at the height of the flanks, analogously to what occurs in the way of wearing shown in figure 5.

[0021] In figure 7 the clothing is worn as a short dress. In order to be worn according to this way, the clothing is folded by entering one half of the tubular structure inside the other half, and making the two edges 3A, 3B match. The head and one arm (the right in figure 7) pass through a first pair of apertures 5B, 6B, whilst the other arm passes through the open ends. This way of wearing the clothing is therefore similar to that of figure 5, but the fabric is double, as a part of the clothing is inserted into the other so as to obtain a shorter dress. The body is therefore inside a double layer of fabric, formed by the two portions inserted one into the other of the tubular structure, whose end edges 3A, 3B are about at the height of the knee or above the knee. The position of the fabric for forming the neckline can vary, and it may assume for example the position shown in figure 6.

Embodiments of the figures 8A to 16

[0022] Figures 8A, 8B, and 8C show a second way for designing a clothing . More in particular, figure 8C shows a perspective view, whilst figures 8A and 8B show the same clothing in a planar flattened shape, in two different arrangements. In this case the clothing, indicated as a

whole with the number 21, has again a substantially tubular structure, with a main portion 23 provided with an elastic edge 25 and, at the opposite end, with two projections 29 delimited by an edge 27 and by a V shaped edge indicated with 31. The projections 29 form laces to fix the clothing to the body, as it will be described below. The projections 29 can be slightly shaped due to the effect of the shape of the cut by means of which they have been formed or simply due to the effect of the elasticity of the fabric, that however is cut according to straight lines, in order to simplify the production and to reduce off-cuts, as it will be better explained with reference to an example of technique for cutting the clothing.

[0023] The clothing 21 can be obtained from an elastic or bi-elastic piece of knitted fabric, cut and sewn for example along the stitching line C which develops from the vertex of the V shaped edge 31 to the elastic edge 25. In a modified embodiment, the whole clothing 21 can be obtained without interruption by means of a circular knitted machine of adequate diameter. In this case the clothing is devoid of seams.

[0024] Figures 9 and 10 show a first way of using the clothing of figures 8A - 8C. In this case the clothing is worn as a sheath dress with the elastic edge 25 in the lower area, at a height which can be at least partially adjustable by knotting the projections of fabric 29 in an adequate manner. These latter, in fact, are bounded behind the nape (see in particular figure 10), so leaving the back uncovered, with a neckline defined by the edge 27. Frontally, the breast is covered by the lower portion of the projection 29 and the edge 31 forms a V shaped neckline.

[0025] In figure 11, the clothing is worn in a similar manner, but rotated by 90° so that the two projections 29, instead of forming two straps which connect to each other by binding the projections behind the nape, are both over one shoulder, whilst the other shoulder remains uncovered. Also in this case, the clothing is worn by binding the two laces or projections 29, whilst the portion 27 of the upper edge passes under the opposite armpit.

[0026] Figures 12 and 13 show, in two different perspective views, a different method for wearing the same clothing. Here it is worn as a shirt by putting the elastic edge 25 at the height of the armpits and above the breast and by folding the lower part of fabric so that the laces or projections 29 can be bound above one of the two shoulders.

[0027] The clothing worn in this manner has a length limited about below the waist, where the fabric of the tubular portion 23 is folded and two parts of the tubular portion 23 overlap at the height of the bust.

[0028] Figure 14 shows a method for using the same clothing wherein the projections or laces 29 remain loose and fall laterally along a flank. The elastic edge 25 is again above the breast in order to hold elastically the tubular portion on the bust.

[0029] Figures 15A, 15B and 15C show in different views a further method of using the clothing of figures 8A - 8C, wherein the clothing is worn in a manner substantially reversed with respect to that shown in figure 9. The elastic edge 25 is about at the height of the armpits so as to cover the breast, whilst the tubular portion 23 of fabric develops downwards and the edge 27 forms the lower part of the clothing that in this case can extend until half of the calf. The projections 29 are bound in order to form a sort of lateral or back bow.

[0030] Figures 16A and 16B show a further way of using the clothing, similar to that of figures 15A, 15B, and 15C, but so as to form a pant, binding each projection around the respective calf.

[0031] As in the previous case, the elastic edge can be positioned at heights different with respect to that illustrated, for example completing the clothing with a t-short or with another piece of clothing which covers the upper part of the bust.

Embodiment of the figures 17 to 19B

[0032] In a third embodiment, the clothing, indicated as a whole with the number 31 and schematically represented in figure 17, has a substantially tubular first portion 33, from which two further tubular portions 35 develop with lower transversal dimensions. More precisely, the width of the tubular portions 35 is about half the width of the tubular portion 33. This latter develops from an edge 37 until a point 39, where the subdivision into two tubular portions 35 occurs. These latter end with edges 41.

[0033] As in the remaining embodiments illustrated above, also in this case the clothing 31 can be formed by a single piece of tubular knitted fabric, obtained through an adequate control of the needles of a circular knitting machine with adequate diameter, or it can be obtained from a piece of a knitted, preferably bi-elastic, fabric sewn along adequate longitudinal sewing lines. Alternatively, as for other clothing, it can be formed by a woven textile structure, or by a non-woven fabric or other.

[0034] In an intermediate position between the vertex 39 where the two tubular portions with lower diameter 35 join to each other and the edge 37, on a front part of the tubular portion 33 a cut, aperture or transversal slit 43 develops. Preferably, as illustrated in the drawing, this aperture 43 is nearer to the vertex 39 than to the edge 37 and has an adequate length so as to extend along a quite wide zone of the tubular portion 33.

[0035] This clothing can be worn substantially in two alternative manners. In a first manner (figure 18) it is worn as normal pants by inserting the legs in the portions 35 which form the leggings of the clothing, whilst no part of the body passes across the slits 43, and this slit is nearly at the height of the waist or of the pelvis, whilst the upper tubular portion 33 with greater diameter is folded about at the height of the waist forming a sort of drape which surrounds the flanks. A pin, a belt, a lace or other suitable means can be used for fixing at the waist the clothing so worn as pants.

[0036] Figures 19A and 19B show a different way for

wearing the clothing, by passing the body through the transversal slit or aperture 43 and by making the legs exit from the edge 37 of the tubular portion 33, which forms the lower part of the clothing. Substantially, with respect to the arrangement of figure 17, in this case the clothing is reversed and therefore the edge 37 becomes the lower edge. The tubular portions 35 with smaller transverse dimensions pass over the shoulders and serve for fixing the clothing, for example by binding them or fixing them by means of a pin to the portion of fabric which remains on the front part, at the height of the bust. Alternatively, the portions 35 can be criss-crossed at the height of the back and connected to each other for example on the back by means of a pin or other, or they can be criss-crossed and made pass on the front, preferably inside the front portion of fabric, i.e. the portion of fabric which develops between the lower edge 37 and the vertex 39 where the tubular portions 35, with lower transversal dimensions, converge, vertex which forms the most deep point of the neck line of the clothing.

[0037] In this embodiment, the clothing can be worn substantially only in two ways, but thanks to its shape, it can cover a wide range of sizes, for example for the size 40 to the 46 with a perfect fit.

Production technique

[0038] As mentioned, each of the various textile structures described can be manufactured by means of various techniques, with a knitted, woven, or nonwoven fabric. Furthermore, each structure can be obtained by a plane piece sewn so as to assume a tubular arrangement, or it can be knitted on a circular knitting machine to obtain directly the tubular structure.

[0039] In some embodiments, the clothing can be produced in only one color, or in different colors, for example colors variable along the longitudinal development by using yarns of different colors. In other embodiments, it is possible to provide for realizing a double-faced clothing, i.e. with an inner color different from the outer color. By using different colors for different portions of the clothing, modifying the way in which it is worn, different chromatic effects are obtained thanks to the display of different surfaces of the fabric. Chromatic variants, variants of color on the two faces or chromatic patterns on various portions of the piece of clothing can be obtained for example also by prints or combining prints and use of yarns or fibers of different colors.

[0040] Thanks to the particularly simple and substantially tubular structure of each of the clothing described, they can be obtained through cutting operations from a tubular textile substantially without cut-offs and therefore with very limited production costs.

[0041] Figures 20 and 21 show by way of example how it is possible two obtain the three clothing described above by means of cutting, for example laser cutting, starting from a single tubular T of fabric, for example a knitted fabric. The portion of tubular fabric T is cut to form a clothing 1, two clothing 21 and a clothing 31, by means of simple straight cutting lines. As it is apparent from the drawing, the production of the four clothing occurs without producing cut-offs of fabric. Furthermore, once the following have been performed: the cuts that forms the apertures 5A, 5B, 6A, 6B, the edges 27, the cut which separates the portions of fabric intended to form the leggings of the clothing 31 and the cut which forms the transversal aperture 43 (this latter cut is performed for example interposing a laser - resistant foil inside the tubular structure T to avoid the cutting of the fabric behind), the clothing are in practice finished, and it is only necessary to sew longitudinally the two leggings of the clothing 31 and to apply the ribbon to the clothing 21.

[0042] Through laser it is also possible to obtain, together with the cut of the fabric, the stabilization of the stitches. The yam, advantageously a synthetic yarn, melts along the cutting lines preventing the laddering of the fabric.

[0043] Finally, the clothing are manufactured by means of an extremely inexpensive production process which does not require particularly skilled workforce.

[0044] It is understood that the drawing only shows an example provided by way of a practical arrangement of the present invention, which can vary in forms and arrangements without however departing from the scope of the concept underlying the invention. Any reference numerals in the appended claims are provided to facilitate reading of the claims with reference to the description and to the drawing, and do not limit the scope of protection represented by the claims.

Claims

1. A piece of clothing comprising at least one portion of tubular fabric (1) and elements that allow the piece of clothing to be worn in different manners, comprising a structure of tubular fabric (3) with two opposite open ends (3A, 3B); **characterized by** two pairs of apertures or slits (5A, 6A; 5B, 6B) transverse with respect to the development of the tubular fabric, the transverse apertures of each pair being approximately mutually opposite, in the same position with respect to the ends (3A, 3B) of said structure of tubular fabric (3).

2. Piece of clothing as claimed in claim 1, **characterized in that** it is formed by a knitted fabric.

3. Piece of clothing as claimed in claim 1 or 2, **characterized in that** it is realized in an elastic fabric and preferably in a bi-elastic fabric.

4. Piece of clothing as claimed in any one of the preceding claims, **characterized in that** the two pairs of transverse apertures (5A, 6A; 5B, 6B) are arranged in opposite positions relative to the centerline

of the structure of tubular fabric (3).

5. Piece of clothing as claimed in claim 4, **characterized in that** the two pairs of transverse apertures (5A, 6A; 5B, 6B) are arranged at different distances with respect to a median line (P-P) transverse to the longitudinal development of the structure of tubular fabric (3).

6. Piece of clothing as claimed in one or more of the previous claims, **characterized in that** it is formed by a single cut piece of fabric.

Patentansprüche

1. Kleidungsstück, das zumindest einen Teil schlauchförmigen Textils (1) und Elemente, die es ermöglichen, dass das Kleidungsstück auf verschiedene Arten getragen werden kann, umfasst, das eine Struktur schlauchförmigen Textils (3) mit zwei gegenüberliegenden offenen Enden (3A, 3B) aufweist; **gekennzeichnet durch** zwei Paare von Öffnungen oder Schlitzen (5A, 6A; 5B, 6B), die quer zum Verlauf des schlauchförmigen Textils verlaufen, wobei die querverlaufenden Öffnungen jedes Paares einander ungefähr in der selben Position in Bezug auf die Enden (3A, 3B) der Struktur des schlauchförmigen Textils (3), gegenüberliegen.

2. Kleidungsstück wie in Anspruch 1 beansprucht, **dadurch gekennzeichnet, dass** es aus einem Gewirk gebildet ist.

3. Kleidungsstück wie in Anspruch 1 oder 2 beansprucht, **dadurch gekennzeichnet, dass** es als eine elastische Textilie ausgeführt ist und bevorzugt als eine bi-elastische Textilie.

4. Kleidungsstück wie in einem der vorhergehenden Ansprüche beansprucht, **dadurch gekennzeichnet, dass** die zwei Paar querverlaufender Öffnungen (5A, 6A; 5B, 6B) in gegenüberliegenden Positionen in Bezug zur Mittellinie der Struktur des schlauchförmigen Textils (3) angeordnet sind.

5. Kleidungsstück wie in Anspruch 4 beansprucht, **dadurch gekennzeichnet, dass** die zwei Paar querverlaufender Öffnungen (5A, 6A; 5B, 6B) in verschiedenen Abständen in Bezug zu einer Medianlinie (P-P), die quer zum Längsverlauf der Struktur des schlauchförmigen Textils (3) verläuft, angeordnet sind.

6. Kleidungsstück wie in einem oder mehreren der vorhergehenden Ansprüche beansprucht, **dadurch gekennzeichnet, dass** es aus einem einzelnen textilen Schnittstück gebildet ist.

Revendications

1. Une pièce de vêtement comprenant au moins une portion de tissu tubulaire (1) et des éléments qui permettent à la pièce de vêtement d'être portée de différentes façons, comprenant une structure de tissu tubulaire (3) avec deux extrémités ouvertes opposées (3A, 3B) ; **caractérisée par** deux paires d'ouvertures ou de fentes (5A, 6A ; 5B, 6B) transversales par rapport à l'évolution de la structure tubulaire, les ouvertures transversales de chaque paire étant sensiblement mutuellement opposées, dans la même position par rapport aux extrémités (3A, 3B) de ladite structure de tissu tubulaire (3).

2. Pièce de vêtement selon la revendication 1, **caractérisée en ce qu'**elle est formée par un tissu tricoté.

3. Pièce de vêtement selon l'une des revendications 1 ou 2, **caractérisée en ce qu'**elle est réalisée dans un tissu élastique et de préférence dans un tissu bi-élastique.

4. Pièce de vêtement selon l'une quelconque des revendications précédentes, **caractérisée en ce que** les deux paires d'ouvertures transversales (5A, 6A ; 5B, 6B) sont disposées dans des positions opposées par rapport à la ligne centrale de la structure du tissu tubulaire (3).

5. Pièce de vêtement selon la revendication 4, **caractérisée en ce que** les deux paires d'ouvertures transversales (5A, 6A ; 5B, 6B) sont disposées à des distances différentes par rapport à une ligne médiane (P-P) transversalement au développement longitudinal de la structure de tissu tubulaire (3).

6. Pièce de vêtement selon l'une ou plusieurs des revendications précédentes, **caractérisée en ce qu'**elle est formée par une seule pièce de découpe de tissu.

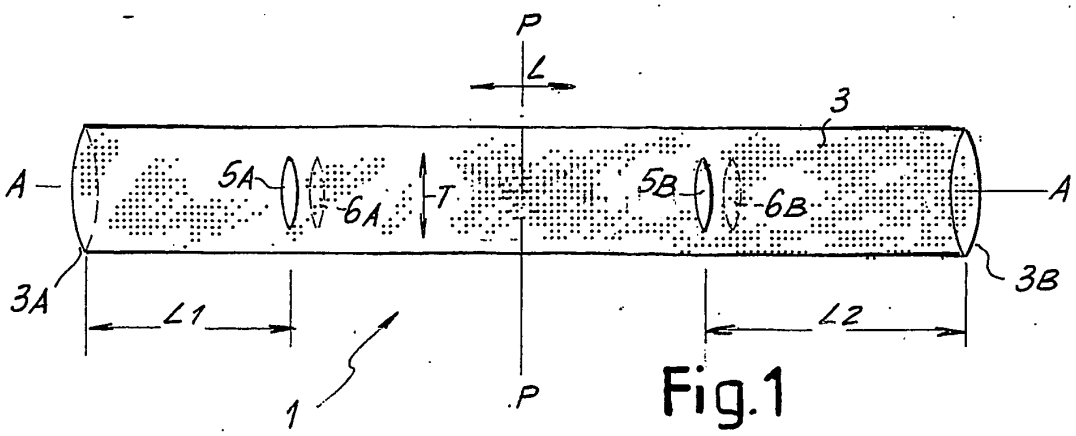


Fig.1

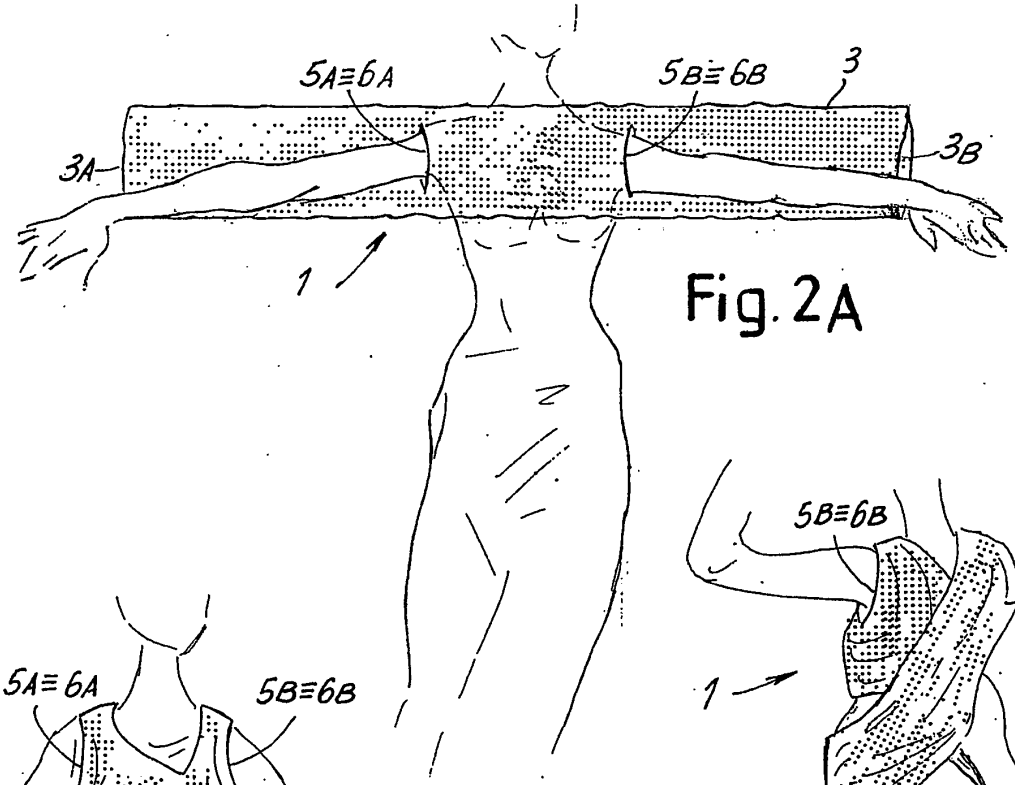


Fig. 2A

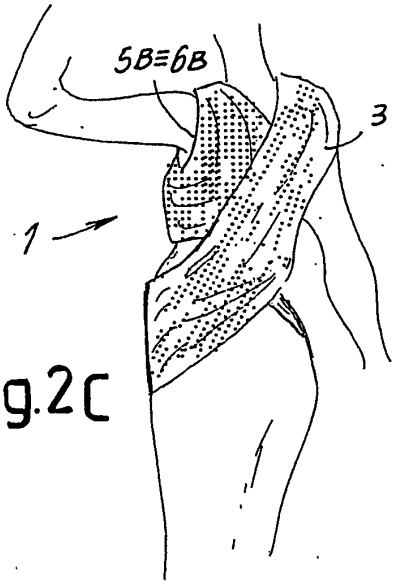


Fig.2C

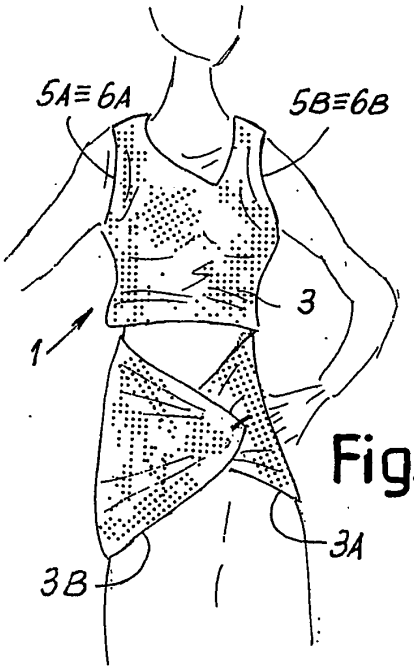


Fig.2B

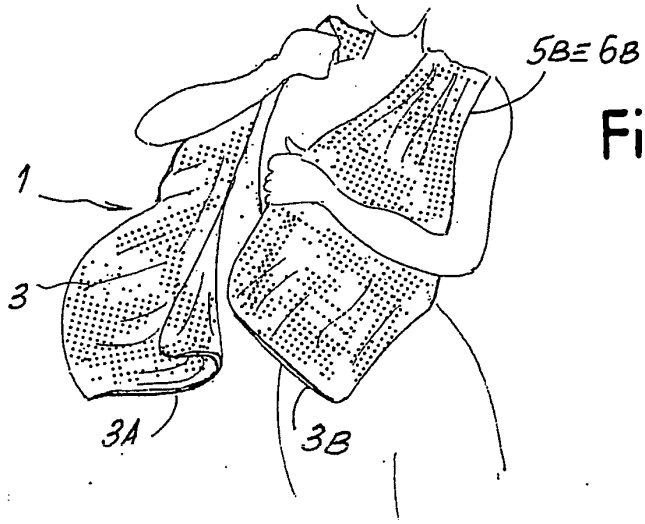


Fig.3A

Fig.3B

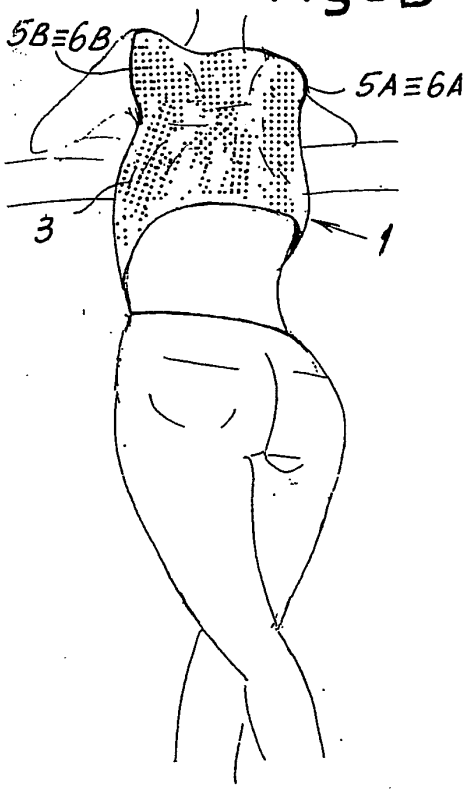
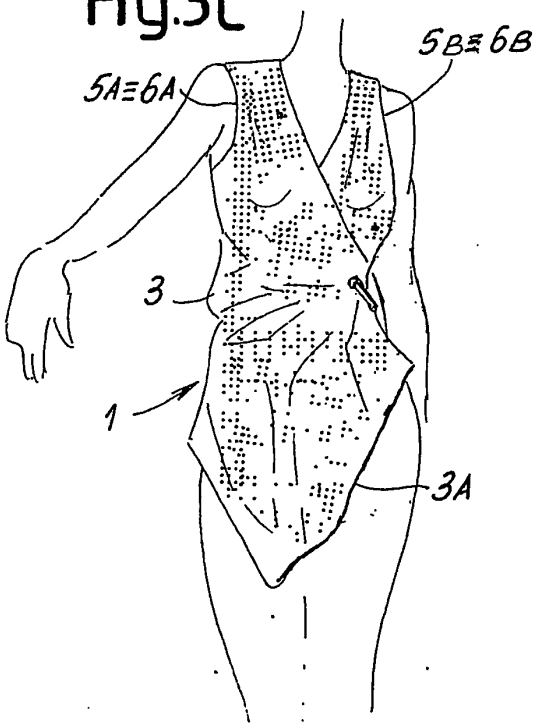


Fig.3C



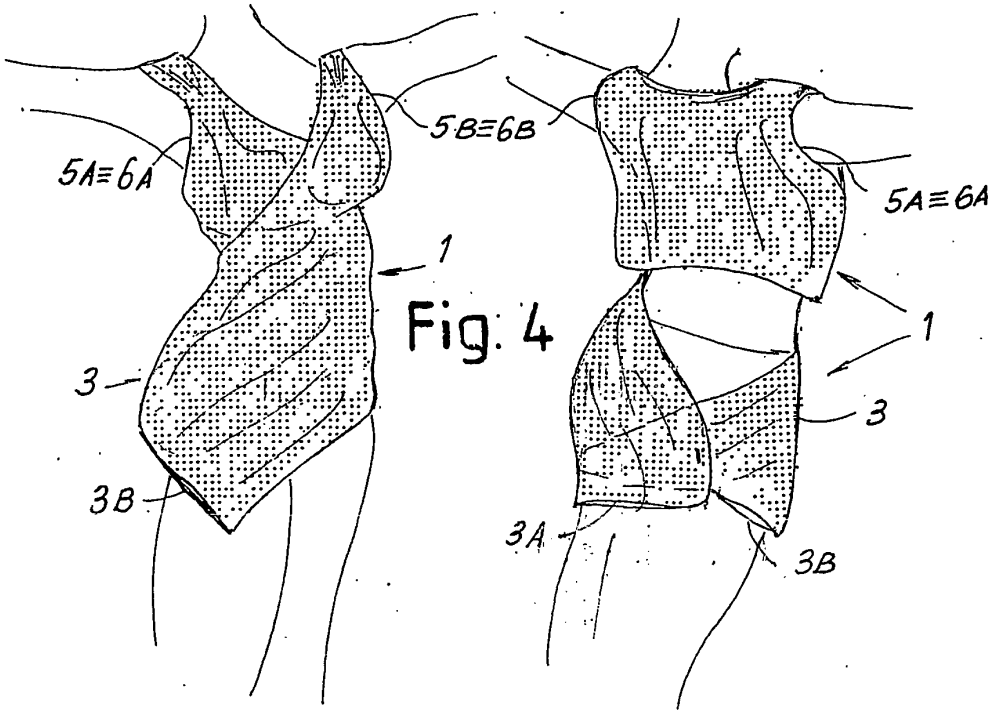


Fig. 4

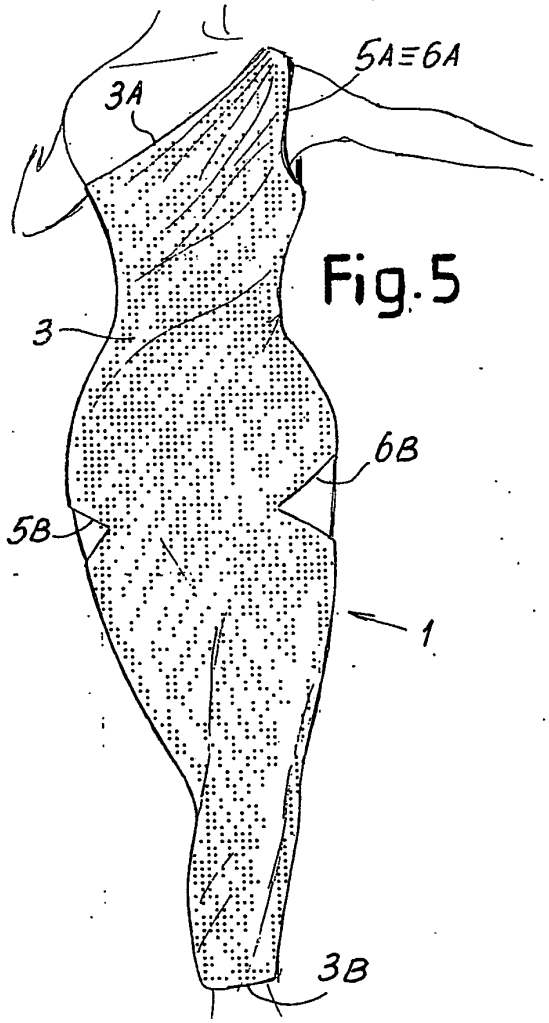


Fig.5

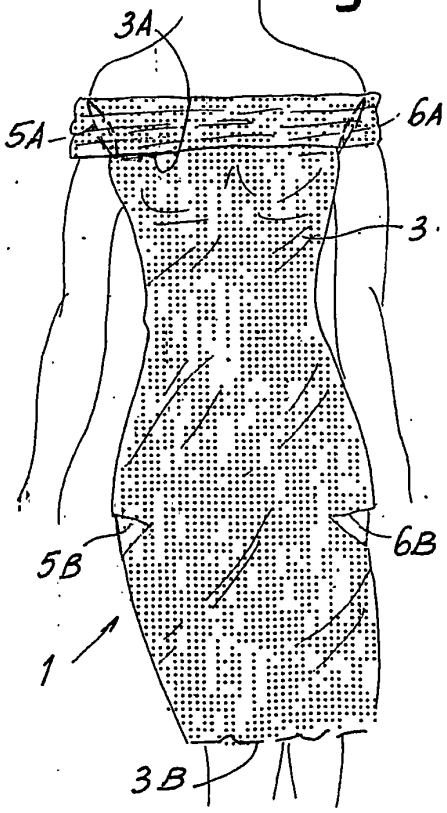
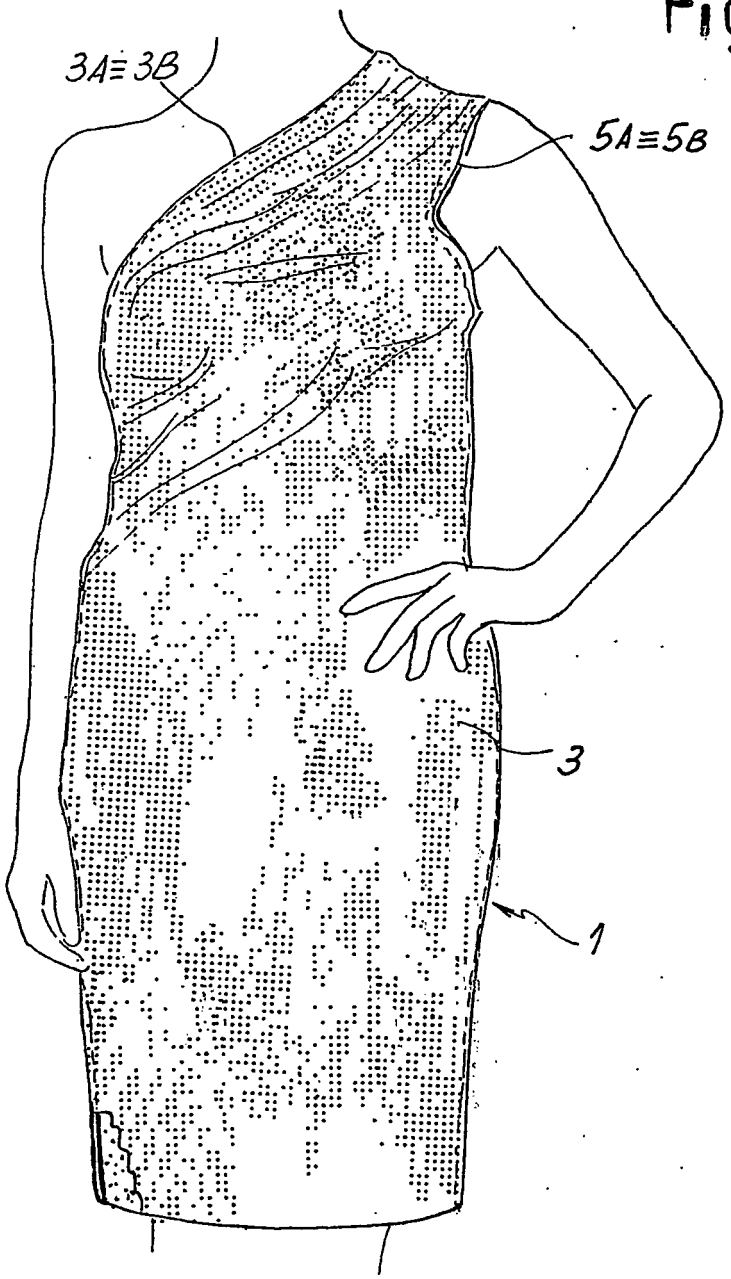


Fig.6

Fig.7



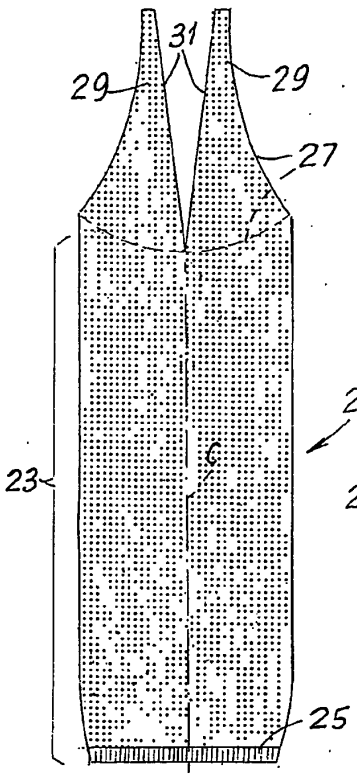


Fig.8B

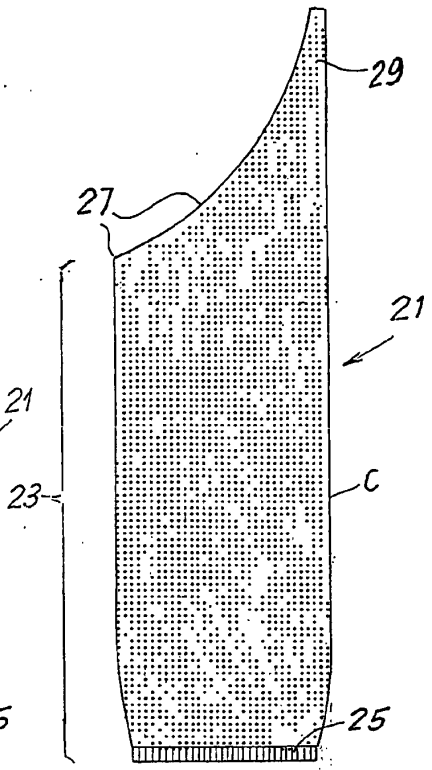


Fig.8A

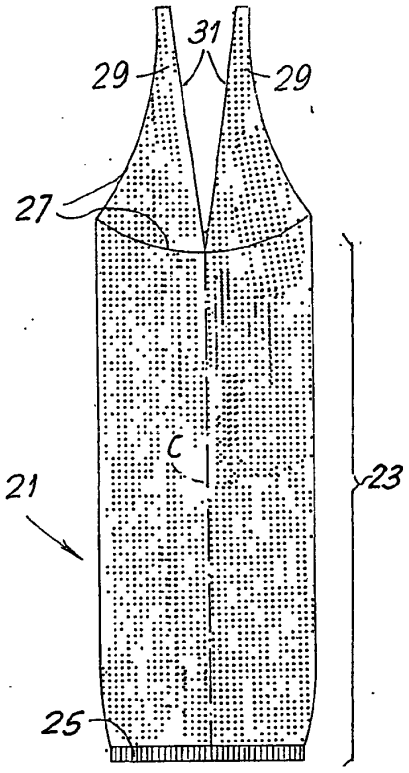


Fig. 8C

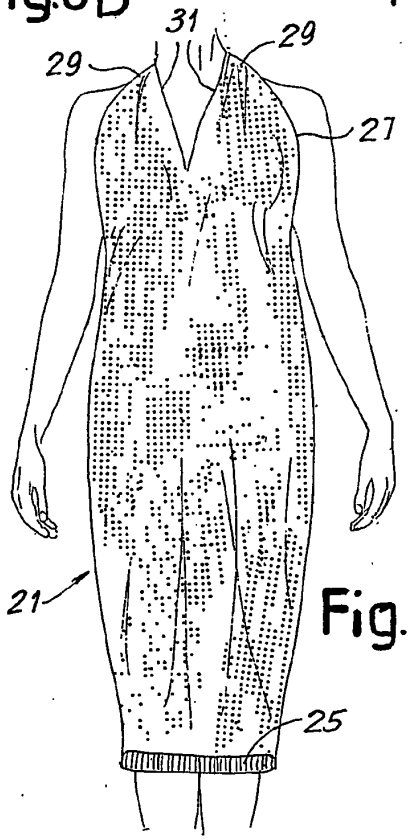


Fig.9

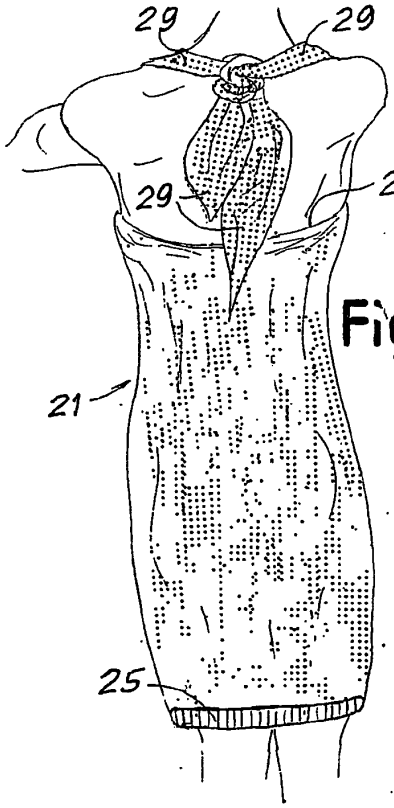


Fig.10

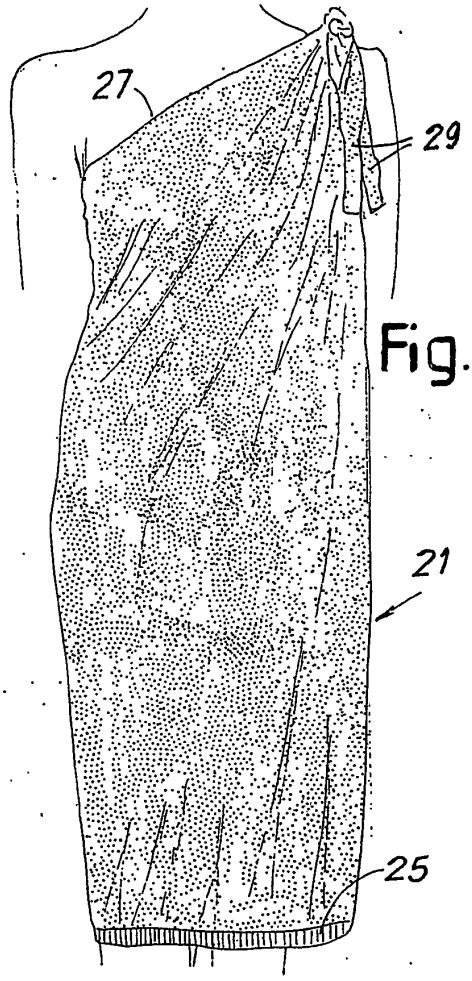


Fig.11

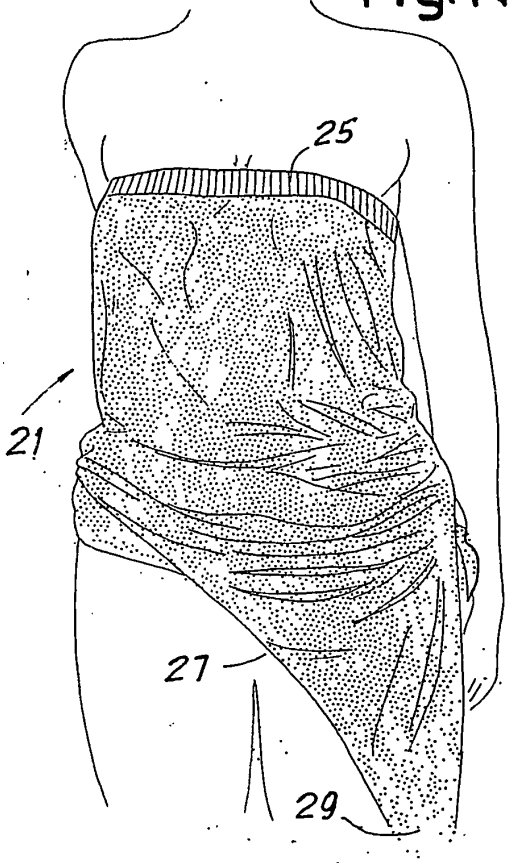


Fig.14

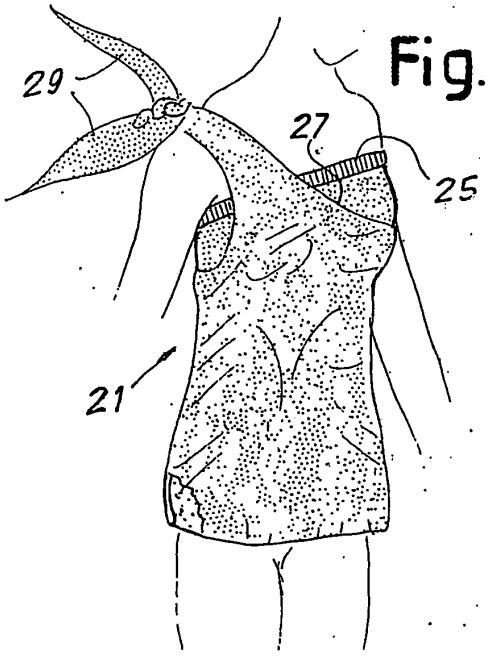


Fig.12

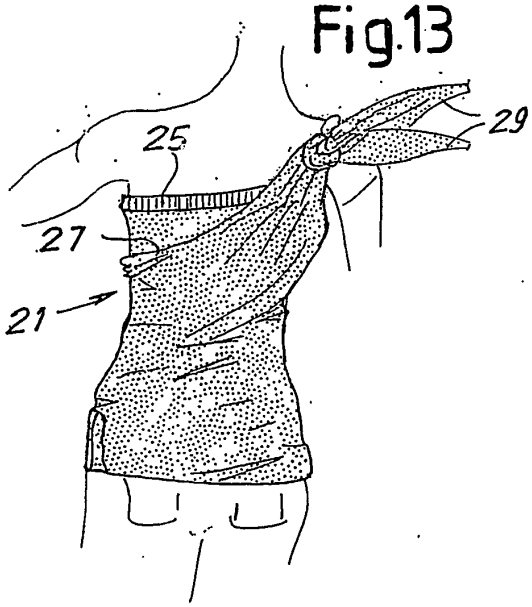


Fig.13

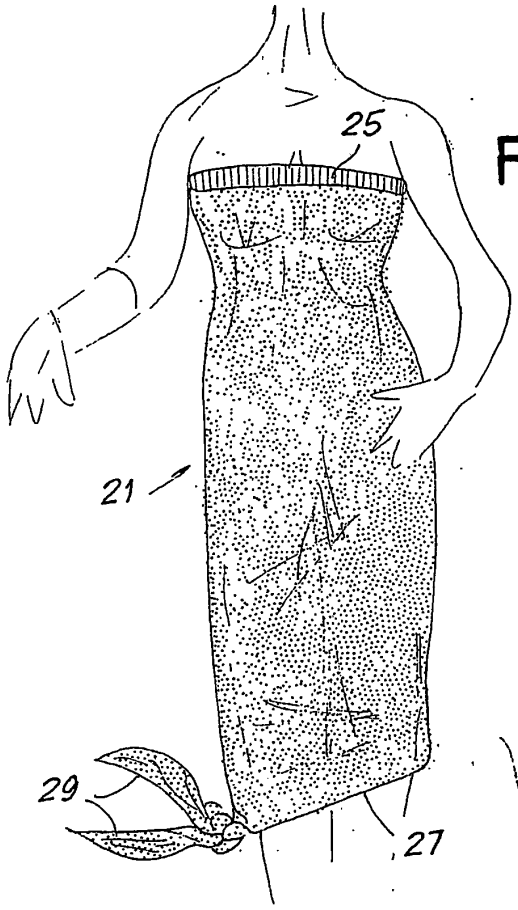


Fig.15A

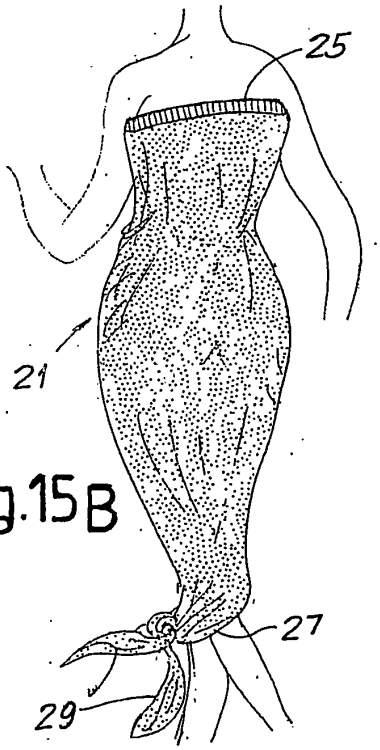


Fig.15B

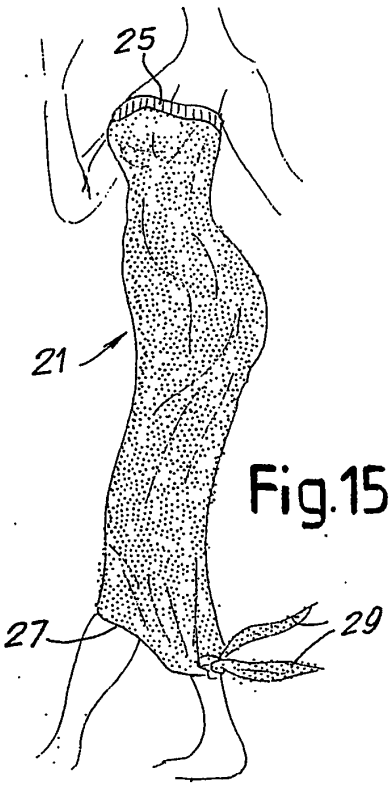


Fig.15C

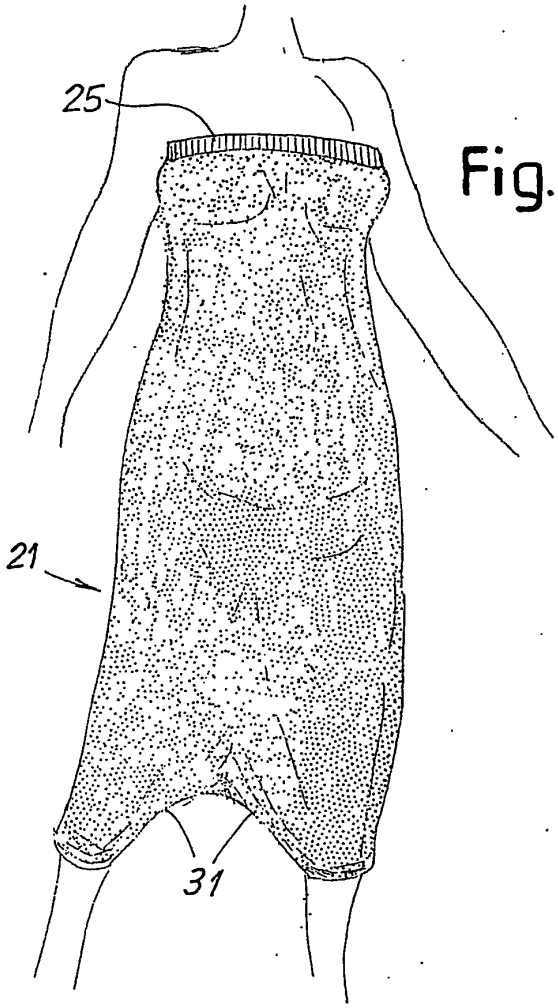


Fig.16A

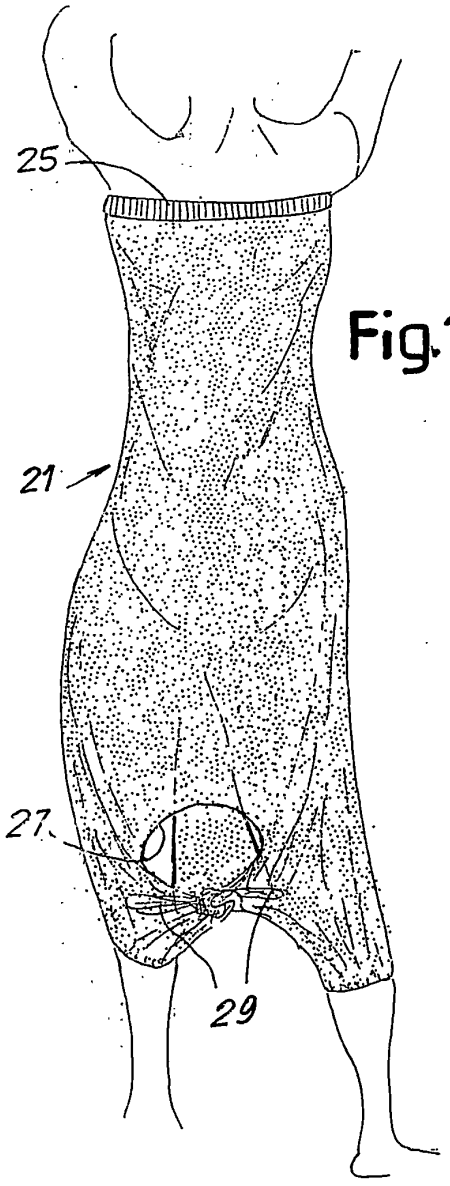
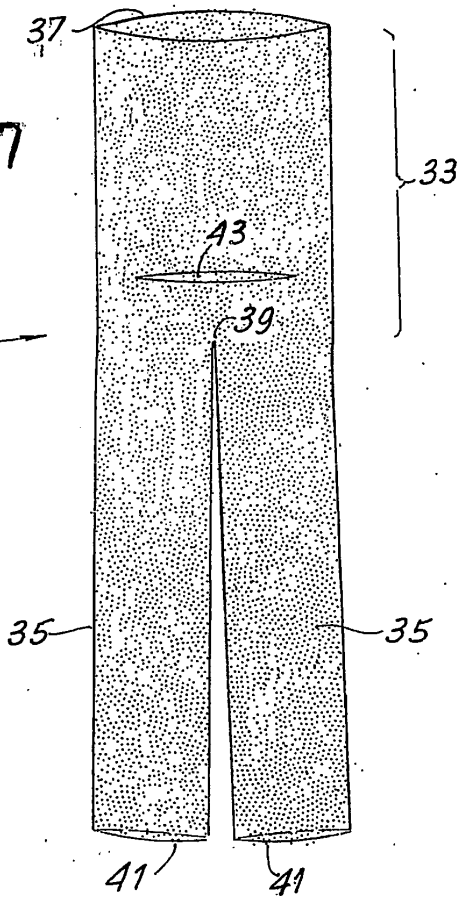


Fig.16B

Fig.17



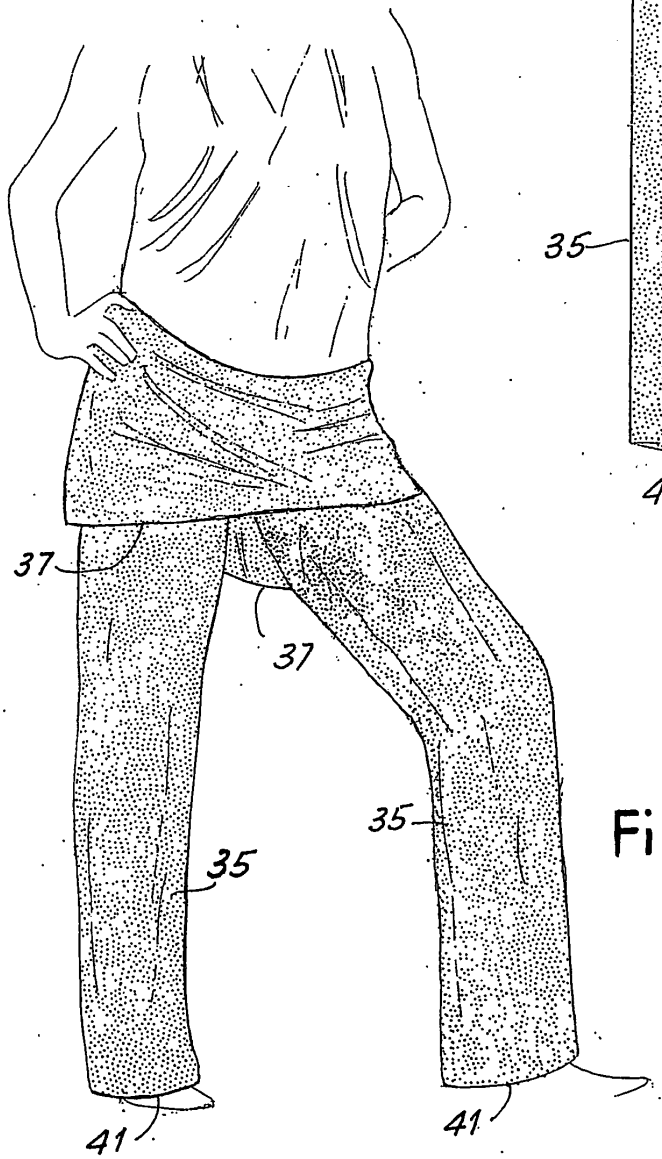


Fig.18

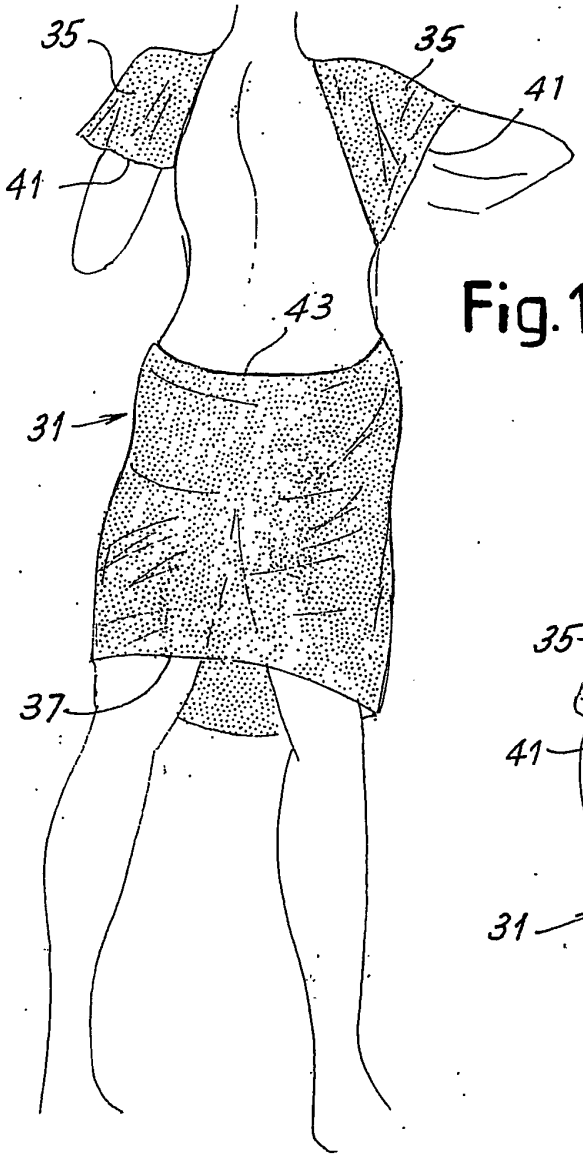
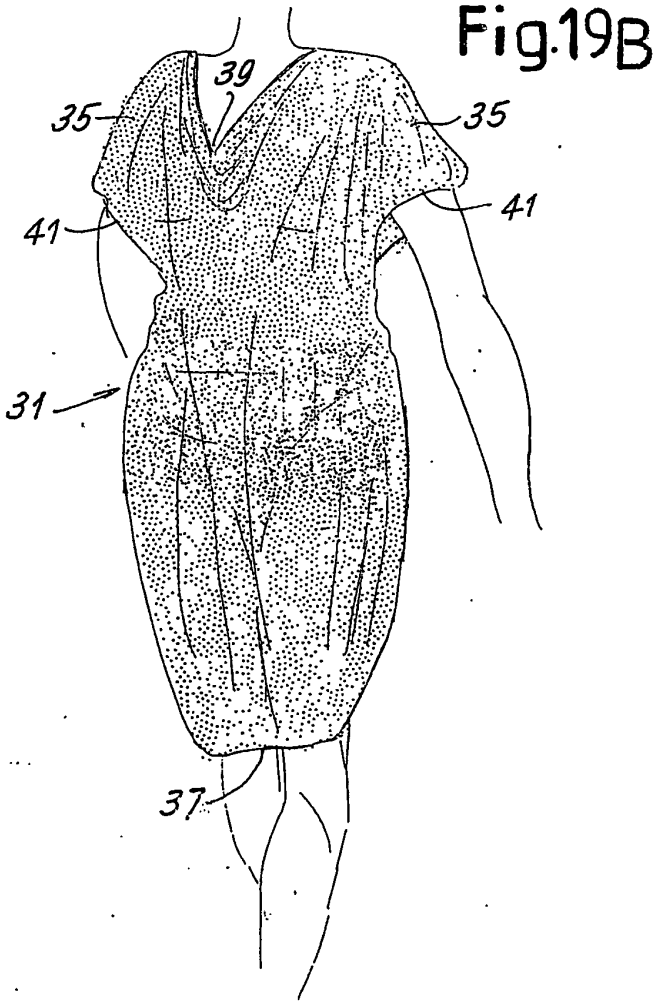


Fig.19A

Fig.19B



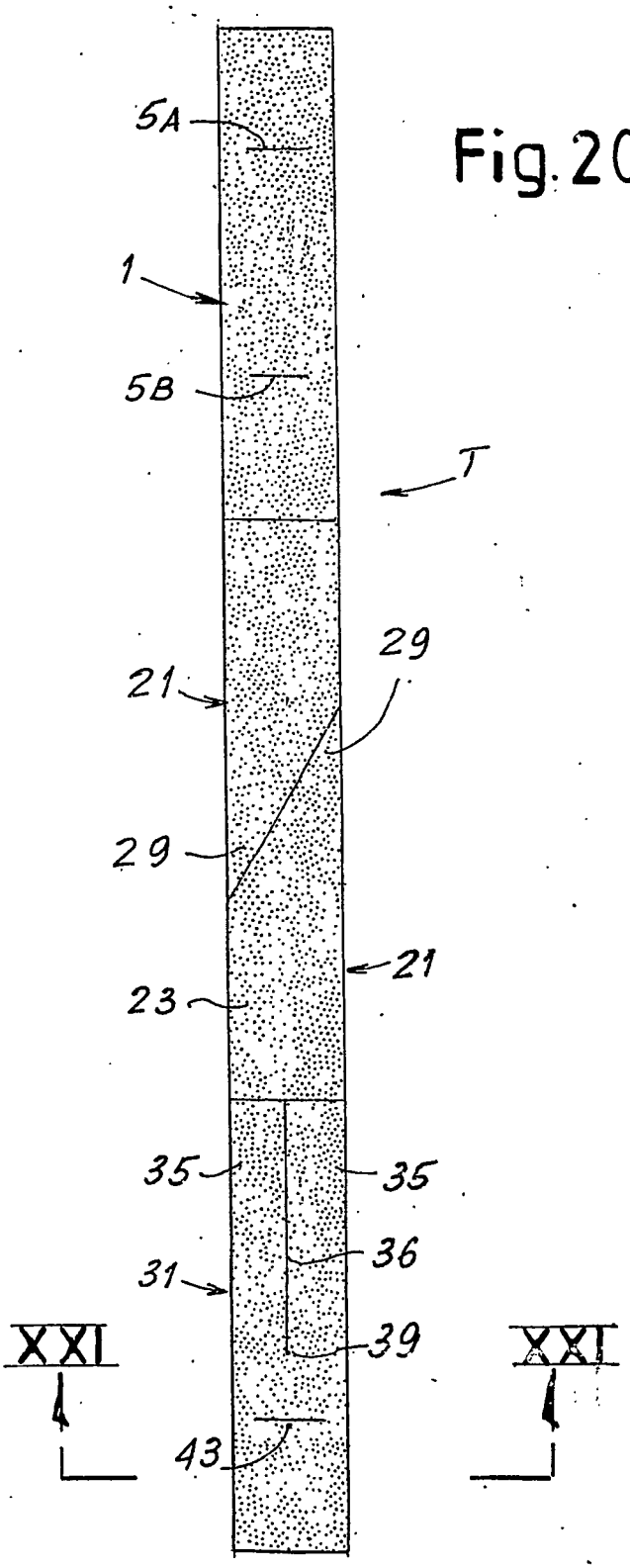


Fig.20

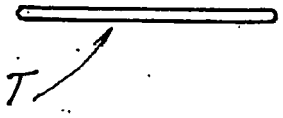


Fig.21

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Patent documents cited in the description

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