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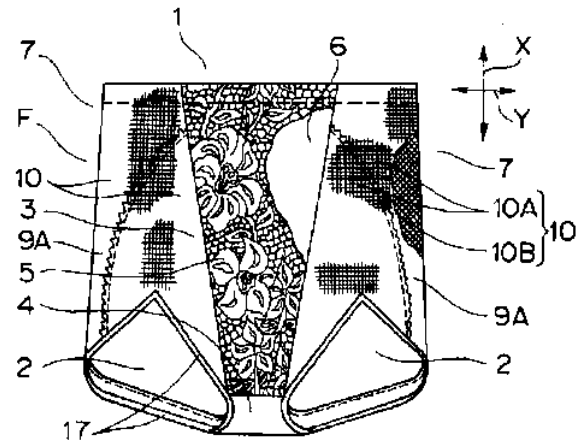
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(54) [Title of the Invention] SHAPING UNDERWEAR

(57) [Abstract]

[Problem] The present invention relates to a shaping underwear, and in particular, to a shaping underwear that is highly stretchable in crucial parts requiring tightening force for tightening flabby sides around the waist, getting the hips into shape, and so on, to provide sufficient tightening force and achieve reliable body shaping, good wearing comfort, easy sewing, high production efficiency, and low assembly and production costs.

[Solution] An underwear body includes a non-stretchable fabric 6 arranged in a vertically-elongated manner from the abdomen 3 to the crotch 4 roughly in the center of a front body F, and a body-length-stretchable fabric 10 arranged from the sides 7,7 to a hip part 8 to form a side-tightening part 9A and a roughly U-shaped hip-shaping part 9B, and consisting of a first stretchable fabric material 10A and a second stretchable fabric material 10B, where the first stretchable fabric material provides stretchability in a vertical direction X, and as for the second stretchable fabric material, a knitted or woven structure is superimposed at an arbitrary inclination angle θ relative to the knitted or woven structure of the first stretchable fabric material to add a stretching force of $\sin\theta$ to the stretching force of the first stretchable fabric material, and the body-length-stretchable fabric provides overall stretching force as a resultant force in the vertical direction X.



[Scope of Claims for Utility Model Registration]

[Claim 1] A shaping underwear worn on the lower limbs and provided, on the lower left and the lower right of an underwear body, with legholes for putting both limbs through, wherein the underwear body comprises a non-stretchable fabric arranged in a vertically-elongated manner from the abdomen to the crotch roughly in the center of a front body and covered with a surface fabric such as a lace fabric on the surface, and a body-length-stretchable fabric arranged on the left and the right of the non-stretchable fabric from the sides to a hip part on the back to form a side-tightening part roughly in a vertically-elongated shape and a hip-shaping part with the backside roughly in a U shape, and consisting of a first stretchable fabric material and a second stretchable fabric material, wherein the first stretchable fabric material provides stretchability in a vertical direction, and as for the second stretchable fabric material, a knitted or woven structure is superimposed at an arbitrary inclination angle θ relative to the knitted or woven structure of the first stretchable fabric material to add a stretching force of $\sin\theta$ to the stretching force of the first stretchable fabric material, and the body-length-stretchable fabric provides overall stretching force as a resultant force in the vertical direction.

[Claim 2] The shaping underwear according to claim 1, wherein the body-length-stretchable fabric is formed by superimposing the second stretchable fabric material where a knitted or woven structure is arranged, with a backside centerline as a boundary, on the left and the right from a back body to a front body, to rise diagonally to the left or the right, have an inclination angle θ of 30-60° relative to the knitted or woven structure of the first stretchable fabric material, and thereby add a stretching force of $\sin\theta$ to the first stretchable fabric material.

[Claim 3] The shaping underwear according to claim 1 or 2, wherein the upper edge of the back of the underwear body is provided with a body-width-stretchable fabric formed by overlapping on the front and back two pieces of body-width-stretchable fabric material horizontally-stretchable relative to the body-length-stretchable fabric.

[Claim 4] The shaping underwear according to claim 1, 2 or 3, wherein gathers are preformed on the backside centerline of the underwear body in such a manner that the back body itself of the underwear body can stretch in a body-length direction by arranging an elastic cord.

[Claim 5] The shaping underwear according to claim 1, 2, 3 or 4, wherein the underwear body is either a shaping underwear such as a girdle and a bodysuit, or menstrual panties.

[Brief Description of the Drawings]

[FIG. 1] a partially cutout front view showing an embodiment of the present invention in which the shaping underwear was applied to a girdle.

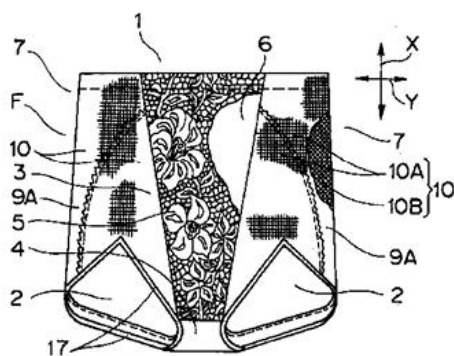
[FIG. 2] likewise a partially cutout rear view.

[FIG. 3] an enlarged front view illustratively showing the structure of a body-length-stretchable fabric constituting the present embodiment.

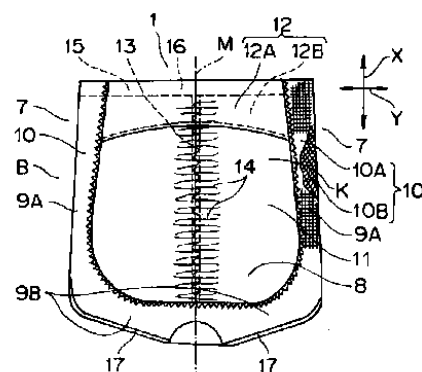
[Reference to the Numerals or Letters]

1	girdle
2	legholes
3	abdomen
4	crotch
5	lace fabric
6	non-stretchable fabric
7	sides
8	hip part
9A	side-tightening part
9B	hip-shaping part
10	body-length-stretchable fabric
10A	first stretchable fabric material
10B	second stretchable fabric material
11	stretchable fabric
12	body-width-stretchable fabric
12A	body-width-stretchable fabric material
12B	body-width-stretchable fabric material
13	elastic cord
14	gathers
X	vertical direction
Y	horizontal direction
θ	inclination angle

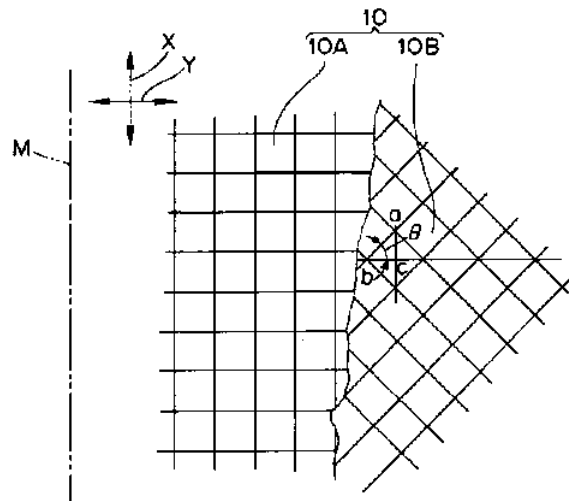
[FIG. 1]



[FIG. 2]



[FIG. 3]



[Detailed Description of the Invention]

[0001]

[Technical Field to which the Invention Pertains]

The present invention relates to shaping underwear that can suitably be applied to shaping underwear such as a girdle or a bodysuit, and in particular, to shaping underwear that is excellent in tightening flabby abdomen and sides around the waist and getting the hips into shape, provides effective and reliable body shaping, fits closely to the body, and has good wearing comfort.

[0002]

[Prior Art]

Conventionally, exemplary shaping underwear worn by women for cosmetic purposes such as toning up body and getting in shape includes a girdle worn on the lower limbs, and a bodysuit that integrates a girdle part, a waist cincher part and a bra part for wear on the lower limbs, torso and chest.

[0003]

As for this girdle, for the purposes such as tightening flabby abdomen or lower abdomen, conventionally a non-stretchable fabric is vertically arranged roughly in the center of a front body to tighten flabby abdomen or lower abdomen. Also, in order to seek hip-shaping, a stretchable body-shaping fabric cut into roughly U shape on the backside is arranged and sewn onto a hip part of a back body, and additionally a stretchable fabric is, for example sewn onto other parts to form a girdle.

[0004]

Also, conventionally, a girdle part, a waist cincher part and a bra part for wear on the lower limbs, torso and chest are, for example sewn using a stretchable fabric, so as to integrally form a bodysuit. Additionally, a vertically-elongated non-stretchable fabric is arranged roughly in the center of a front body of the waist cincher part and girdle part to tighten flabby abdomen, lower abdomen and stomach. Furthermore, the stretchable body-shaping fabric cut into roughly U shape on the backside is arranged at the hip part of a back body of the girdle part, and the edges of adjacent parts are overlapped or folded back and sewn to join together. Furthermore, after sewing, for example, edge treatment such as wrapping reinforcing threads around edges is performed to prevent fraying at the fiber structures of edges, thereby seeking for hip-shaping.

[0005]

[Problems to be Solved by the Invention]

However, as for the conventional girdle or bodysuit, the vertically-elongated non-stretchable fabric is arranged roughly in the center of the front body, and thereby this non-stretchable fabric is applied to users' flabby abdomen, lower abdomen, stomach, etc. to tighten them. Also, a stretchable hip-shaping fabric cut into roughly U shape on the backside is sewn onto the hip part of the back body of the bodysuit or bodysuit part to seek hip-shaping. When users wear the shaping underwear, the whole of their body is tightened by the underwear body to provide a shaping function, leading to insufficient stretching force in crucial parts requiring tightening force for performing body shaping such as mainly tightening flabby stomach and mainly seeking for hip-shaping.

Therefore, in particular, tightening users' flabby sides around the waist to roll the overall fat from the periphery to the center part of abdomen is insufficient for hip-shaping and body shaping. Also, tightening the whole of the body leads to a tight fit during the wear.

Furthermore, in order to seek hip-shaping, the stretchable fabric cut into roughly U shape on the backside is arranged at the hip part of the back body. The stretchable fabric used as other part for forming girdle or bodysuit and the stretchable fabric used for body shaping are joined together by overlapping the edges of adjacent parts or folding them back and sewing the joining points. Furthermore, after sewing, for example, edge treatment such as wrapping reinforcing threads around edges is performed to prevent fraying at the fiber structures of edges, which increases the number of sewing points and work steps, requires a lot of time and effort for sewing, and thus results in low production efficiency.

[0006]

The present invention overcomes the disadvantages of prior art, and provides, for example, a shaping underwear that is highly stretchable in crucial body parts requiring tightening force for tightening flabby sides around the waist and getting the hips into shape, to provide sufficient tightening force and achieve reliable body shaping, good wearing comfort during users' wear, easy sewing, high production efficiency, and low assembly and production costs.

[0007]

[Means for Solving the Problems]

Given the aforementioned problems, the present invention employed a means described in claim 1, which is a shaping underwear worn on the lower limbs and provided, on the lower left and the lower right of an underwear body, with legholes for putting both limbs through, where the underwear body includes a non-stretchable fabric arranged in a vertically-elongated manner from the abdomen to the crotch roughly in the center of a front body and covered with a surface fabric such as a lace fabric on the surface, and a body-length-stretchable fabric arranged on the left and the right of the non-stretchable fabric from the sides to a hip part on the back to form a side-tightening part roughly in a vertically-elongated shape and a hip-shaping part with the backside roughly in a U shape, and consisting of a first stretchable fabric material and a second stretchable fabric material, where the first stretchable fabric material provides stretchability in a vertical direction, and as for the second stretchable fabric material, a knitted or woven structure is superimposed at an arbitrary inclination angle θ relative to the knitted or woven structure of the first stretchable fabric material to add a stretching force of $\sin\theta$ to the stretching force of the first stretchable fabric material, and the body-length-stretchable fabric provides overall stretching force as a resultant force in the vertical direction

[0008]

Also, the device described in claim 2 of the present invention employed a means according to claim 1, where the body-length-stretchable fabric is formed by superimposing the second stretchable fabric material where a knitted or woven structure is arranged, with a backside centerline as a boundary, on the left and the right from a back body to a front body, to rise diagonally to the left or the right, have an inclination angle of 30-60° relative to the knitted or woven structure of the first stretchable fabric material, and thereby add a stretching force of $\sin\theta$ to the first stretchable fabric material.

[0009]

Also, the device described in claim 3 of the present invention employed a means according to claim 1 or 2, where the upper edge of the back of the underwear body is provided with a body-width-stretchable fabric formed by overlapping on the front and back two pieces of body-width-stretchable fabric material horizontally-stretchable relative to the body-length-stretchable fabric.

[0010]

Also, the device described in claim 4 of the present invention employed a means according to claim 1, 2 or 3, where gathers are preformed on the backside centerline of the underwear body in such a manner that the back body itself of the underwear body can stretch in a body-length direction by arranging an elastic cord.

[0011]

Also, the device described in claim 5 of the present invention employed a means according to claim 1, 2, 3 or 4, where the underwear body is either a shaping underwear such as a girdle and a bodysuit, or menstrual panties.

[0012]

[Embodiments of the Invention]

The specific example of embodiment of the present invention is described with reference to the drawings.

FIG. 1 is a partially cutout front view showing an embodiment of the present invention in which the shaping underwear was applied to a girdle, FIG. 2 is likewise a partially cutout rear view, FIG. 3 is an enlarged front view illustratively showing the structure of a body-length-stretchable fabric constituting the present embodiment.

[0013]

1 is a girdle as an underwear body, and this girdle 1 is worn on the lower limbs, and provided, on the lower left and the lower right, with legholes 2, 2 for putting both limbs through.

Also, the girdle 1 includes a non-stretchable fabric 6 arranged in a vertically-elongated manner from the abdomen 3 to the crotch 4 roughly in the center of a front body F and covered with a surface fabric such as a lace fabric 5 on the surface; a body-length-stretchable fabric 10 continuously arranged together with the left and right surfaces of the non-stretchable fabric 6 from the sides 7, 7 to a hip part 8 on the back to form a side-tightening part 9A roughly in a vertically-elongated shape and a hip-shaping part 9B with the backside roughly in a U shape, and consisting of a first stretchable fabric material 10A and a second stretchable fabric material 10B; and a stretchable fabric 11 arranged at an inner region of a back space K surrounded by an inner region of the body-length-stretchable fabric 10 to provide stretching force in a horizontal direction Y; where the first stretchable fabric material provides stretchability in vertical direction X, and as for the second stretchable fabric material, a knitted or woven structure is superimposed at an arbitrary angle θ relative to the knitted or woven structure of the first stretchable fabric material 10A.

[0014]

Also, the body-length-stretchable fabric 10 provides the overall stretching force as a resultant force in vertical direction X by the following means. The knitted or woven structure of the second stretchable fabric material 10B is arranged, as shown in FIGs. 2 and 3, with a backside centerline M as a boundary, on the left and the right from a back body B to a front body F, to rise diagonally to the left or the right, have a knitted-or-woven-structure inclination angle θ of 30-60° (for example, as shown in FIG. 3, preferably 45° in the present embodiment) relative to the knitted or woven structure of the first stretchable fabric material 10A, and thereby in the triangle a, b, c shown in FIG. 3, a stretching force of $\sin\theta$ is added to the first stretchable fabric material 10A. Note that in FIG. 3, for convenience, only the case is shown where the inclination angle θ of the knitted or woven structure of the second stretchable fabric material 10B relative to the knitted or woven structure of the first stretchable fabric material 10A is an inclination angle formed by rising, with a backside centerline M as a boundary, to the right. The case where the inclination angle θ is an inclination angle formed by rising to the left is omitted, but this is merely an illustration for convenience.

Also, as the body-length-stretchable fabric 10, for example, a fabric such as a power net is used where stretchable threads such as polyurethane fibers or elastic cords are knitted or woven.

Also, as described above, the body-length-stretchable fabric 10 is lined by overlapping and sewing the second stretchable fabric material 10B onto the backside of the first stretchable fabric material 10A arranged continuously on the left and right of the non-stretchable fabric 6 from the sides 7, 7 to the hip part 8 on the back, along with the surface. Therefore, unlike conventional methods where a stretchable body-shaping fabric cut into roughly U shape on the back to seek hip-shaping is required to be adjacent and joined to other stretchable or non-stretchable fabric by overlapping the edges of adjacent parts or folding them back and sewing the joining points, the number of sewing points and work steps do not increase, and the sewing work does not require much time and labor, thus increasing the production efficiency for manufacturing the girdle 1.

[0015]

Also, the upper edge of the back of the girdle 1 of the underwear body is provided with a body-width-stretchable fabric 12 formed by overlapping on the front and back two pieces of body-width-stretchable fabric materials 12A, 12B that are stretchable in a horizontal direction Y relative to the body-length-stretchable fabric 10, and this allows the girdle 1 to stretch in the body-width direction to accommodate users' waist size, whether wide or narrow, and enables the girdle 1 to be worn snugly around the waist.

[0016]

Also, on the backside centerline M of the girdle 1 serving as the underwear body, gathers 14 are preformed in such a manner that the back body B itself of the girdle 1 can stretch in the body-length direction (vertical direction X) by arranging an elastic cord 13, and thereby the body-length becomes compact. During the wear, the body-length of the girdle 1 is adjusted to stretch just right against the contracting force of the elastic cord 13 for comfortable wear. 15 is a rubber band sewn onto the inner edge of an opening 16 located at the waist part of the girdle 1, and 17 is a rubber band sewn onto the inner edges of the legholes 2, 2.

[0017]

An embodiment of the shaping underwear of the present invention consists of the aforementioned configuration, and users wear the girdle 1 on their lower limbs by putting both limbs through the legholes 2, 2 provided on the lower left and the lower right of the girdle 1.

In this case, as shown in FIG. 2, as for the girdle 1, gathers 14 are preformed on the backside centerline M in such a manner that the back body B itself can stretch in the body-length direction by arranging the elastic cord 13, so when users wear the girdle 1, the body-length of the girdle 1 stretches against the contracting force of the elastic cord 13, and during the wear, the girdle 1 can fit closely to users' body without being baggy.

[0018]

Additionally, a vertically-elongated non-stretchable fabric 6 covered with a surface fabric such as lace fabric 5 is arranged from the abdomen 3 to the crotch 4 roughly in the center of the front body F of the girdle 1, and this non-stretchable fabric 6 is applied to be closely attached against users' abdomen 3, lower abdomen, etc., and thereby users' body is tightened and shaped. In this respect, the effect is the same as that of conventional girdles.

[0019]

However, in the present embodiment, on the left and the right of the vertically-elongated non-stretchable fabric 6 arranged roughly in the center of the front body F of the girdle 1, from the sides 7, 7 to the hip part 8 on the back, the side-tightening parts 9A, 9A roughly in a vertically-elongated shape and the hip shaping parts 9B, 9B with the backside roughly in a U shape are formed by the body-length-stretchable fabric 10 where the first stretchable fabric material 10A for providing stretchability in the vertical direction X overlaps the second stretchable fabric material 10B for adding the stretching force of $\sin\theta$ to the first stretchable fabric material 10A in the triangle a, b, c by superimposing a knitted or woven structure at an arbitrary inclination angle θ (preferably 30-60°, and further preferably, for example 45°, as shown in FIG. 3) relative to the knitted or woven structure of the first stretchable fabric material 10A, and thereby the overall stretching force is provided as a resultant force in vertical direction X. Therefore, when users wear the girdle 1, the first stretchable fabric material 10A for providing stretchability in the vertical direction X works in cooperation with the second stretchable fabric material 10B for adding the stretching force of $\sin 45^\circ$ to the first stretchable fabric material 10A in the triangle a, b, c by superimposing a knitted or woven structure at an inclination angle θ (roughly 45°, as shown in FIG. 3) relative to the knitted or woven structure of the first stretchable fabric material 10A, and thereby the overall stretching force in the vertical direction X is provided. Therefore, the girdle 1 can be worn by fitting closely to users' body shape without being baggy. In particular, the side-tightening parts 9A, 9A roughly in a vertically-elongated shape tighten the sides 7, 7 around the waist with sufficient tightening force, thus achieving reliable body shaping.

[0020]

Furthermore, as described above, the body-length-stretchable fabric 10 is formed by superimposing the first stretchable fabric material 10A providing the stretchability in the vertical direction X, and the knitted or woven structure of the second stretchable fabric material 10B at an inclination angle θ of roughly 45° relative to the knitted or woven structure of the first stretchable fabric material 10A. Therefore, when users in the girdle 1 moves, the first stretchable fabric material 10A provides the stretching force in the vertical direction X, and the second stretchable fabric material 10B formed by superimposing a knitted or woven structure at an inclination angle θ of roughly 45° relative to the knitted or woven structure of the first stretchable fabric material 10A provides the stretching force of $\sin\theta$ to be added to the stretching force of the first stretchable fabric material 10A in the triangle a, b, c, and thereby the stretching force serving as a resultant force is provided in the vertical direction X. Therefore, the girdle 1 fits closely to users' body, and follows users' turning and twisting movement at the waist to provide sufficient stretchability, resulting in excellent mobility and functionality.

[0021]

Also, the body-length-stretchable fabric 10 is formed by the first stretchable fabric material 10A for mainly providing stretchability in the vertical direction X for the hip-shaping part 9B that is across the hip part 8 on the back of users' back in the back body B and has a backside roughly in a U shape, and a second stretchable fabric material 10B formed by superimposing a knitted or woven structure at an inclination angle θ of roughly 45° relative to the knitted or woven structure of the first stretchable fabric material 10A, so likewise, the stretching force of $\sin\theta$ provided by the second stretchable fabric material 10B of the hip-shaping part 9B in the triangles a, b, c is added to the stretching force of the first stretchable fabric material 10A, and the stretching force serving as a resultant force is provided in the vertical direction X, and thereby achieving a reliable hip-shaping and body shaping.

[0022]

Also, the upper edge of the back of the girdle 1 is provided with a body-width-stretchable fabric 12 formed by overlapping on the front and back two pieces of body-width-stretchable fabric materials 12A, 12B that are stretchable in the horizontal direction Y relative to the body-length-stretchable fabric 10. Therefore, when users wear the girdle 1, it can stretch in the body-width direction to accommodate users' waist size, whether wide or narrow, and enables the girdle 1 to be worn snugly around the waist.

[0023]

Also, in the aforementioned embodiment, the girdle 1 is described as a representative of shaping underwear, but the shaping underwear 1 is not limited to this, and for example, the present invention is also applicable to shaping underwear, underwear and menstrual panties such as a bodysuit in which a girdle part, a waist cincher part and a bra part are integrally formed.

[0024]

[Effects of the Invention]

As described above, the device described in claim 1 of the present invention is a shaping underwear worn on the lower limbs and provided, on the lower left and the lower right of an underwear body, with legholes for putting both limbs through, where the underwear body includes a non-stretchable fabric arranged in a vertically-elongated manner from the abdomen to the crotch roughly in the center of a front body and covered with a surface fabric such as a lace fabric on the surface, and a body-length-stretchable fabric arranged on the left and the right of the non-stretchable fabric from the sides to a hip part on the back to form a side-tightening part roughly in a vertically-elongated shape and a hip-shaping part with the backside roughly in a U shape, and consisting of a first stretchable fabric material and a second stretchable fabric material, where the first stretchable fabric material provides stretchability in a vertical direction, and as for the second stretchable fabric material, a knitted or woven structure is superimposed at an arbitrary inclination angle θ relative to the knitted or woven structure of the first stretchable fabric material to add a stretching force of $\sin\theta$ to the stretching force of the first stretchable fabric material, and the body-length-stretchable fabric provides overall stretching force as a resultant force in the vertical direction. Also, the device described in claim 2 of the present invention is according to claim 1, where the body-length-stretchable fabric is formed by superimposing the second stretchable fabric material where a knitted or woven structure is arranged, with a backside centerline as a boundary, on the left and the right from a back body to a front body, to rise diagonally to the left or the right, have an inclination angle θ of 30-60° relative to the knitted or woven structure of the first stretchable fabric material, and thereby add a stretching force of $\sin\theta$ to the first stretchable fabric material. Also, the device described in claim 5 of the present invention is according to claim 1, 2, 3 or 4, where the underwear body is either a shaping underwear such as a girdle and a bodysuit, or menstrual panties, so for example, the stretching force is sufficiently provided in the crucial parts requiring tightening force for tightening flabby sides around the waist, getting the hips into shape, and so on, to achieve reliable body shaping. Also, the fit during the wear is comfortable and close without discomfort, and furthermore, the sewing is easy and the production efficiency is high, resulting in high production efficiency and low assembly and production costs.

[0025]

Also, the device described in claim 3 of the present invention is according to claim 1 or 2, where the upper edge of the back of the underwear body is provided with a body-width-stretchable fabric formed by overlapping on the front and back two pieces of body-width-stretchable fabric material horizontally-stretchable relative to the body-length-stretchable fabric. Therefore, when users wear the girdle, it can stretch in the body-width direction to accommodate users' waist size, whether wide or narrow, and enables the girdle to be worn snugly around the waist part.

[0026]

Also, the device described in claim 4 of the present invention is according to claim 1, 2 or 3, where gathers are preformed on the backside centerline of the underwear body in such a manner that the back body itself of the underwear body can stretch in a body-length direction by arranging an elastic cord. Therefore, when users wear the girdle, the body-length of the girdle stretches against the contracting force of the elastic cord, and during the wear, the girdle can fit closely to users' body without being baggy.