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(54) GARMENT WITH COMPRESSION-GENERATING SECTIONS

(57) The present invention provides a garment with compression-generating sections, which can shape a wearer's body into a favorable silhouette by smoothing sagging skin and also can keep the silhouette even when the wearer moves, while giving less tightened feeling to the wearer. The garment (100) with compression-generating sections according to the present invention includes: at least one body section (101) including a portion that is tubular when the garment is worn; and at least one compression-generating section (102). The body section (101) is stretchable so as to fit a wearer's body. The compression-generating section (102) is disposed in such a manner that, when the garment is worn, it is located above a body region where skin sagging occurs and extends in a direction along Langer's lines. The compression-generating section (102) has lower stretchability than the body section (102) at least in an insertion direction in order to increase compression provided by a portion of the garment where the compression-generating section (102) is disposed.

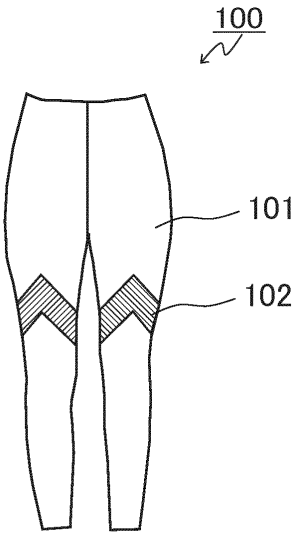

FIG. 1A

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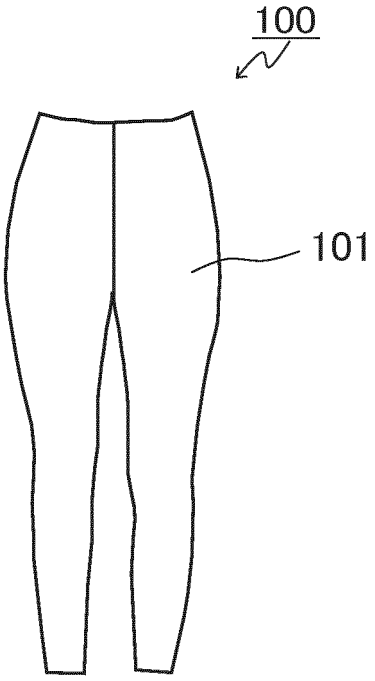

FIG. 1B

Description

Technical Field

[0001] The present invention relates to a garment with compression-generating sections.

Background Art

[0002] As a configuration of a garment that shapes the outline (skin sagging) of body regions covered with the garment or the body shape of a wearer when the garment is worn, it has been proposed to make partial change in the knit structure of the garment or to provide patches in the garment, in order to impart a body-shaping function to the garment by causing particular portions of the garment to exhibit a different tightening force (compression) from other portions. For example, Patent Document 1 proposes a garment for shaping the buttocks of a wearer, in which a knit structure section that exhibits a powerful shaping effect for the buttocks by causing strong compression is disposed at a suitable position. With this configuration, the garment can lift up the buttocks without causing edge parts thereof to dig into the wearer's buttocks when the garment is worn, so that the buttocks and the periphery thereof can be shaped into a natural shape.

Citation List

Patent Document(s)

[0003] Patent Document 1: JP 2006-233344 A

Brief Summary of the Invention

Problem to be Solved by the Invention

[0004] A conventional body-shaping garment, such as the one described above, can shape a wearer's body immediately after it is put on. However, the garment may get loose as the wearer moves, which may cause edge parts of the garment to dig into the wearer's skin, for example. Thus, the conventional body-shaping garment has a problem in that it cannot keep the shaped body silhouette. Furthermore, increasing a tightening force in order to prevent the garment from getting loose may deteriorate wearing comfort or even may make the edge parts of the garment more liable to dig into the wearer's skin.

[0005] With the foregoing in mind, it is an object of the present invention to provide a garment with compression-generating sections, which can shape a wearer's body into a favorable silhouette by smoothing sagging skin and also can keep the silhouette even when the wearer moves, while giving less tightened feeling to the wearer.

Means for Solving Problem

[0006] In order to achieve the above object, the present invention provides a garment with a compression-generating section, including: at least one body section including a portion that is tubular when the garment is worn; and at least one compression-generating section, wherein the body section is stretchable so as to fit a wearer's body, the compression-generating section is disposed in such a manner that, when the garment is worn, the compression-generating section is located above a body region where skin sagging occurs and extends in a direction along Langer's lines, and the compression-generating section has lower stretchability than the body section at least in an insertion direction in order to increase compression provided by a portion of the garment where the compression-generating section is disposed.

Effects of the Invention

[0007] With the above-described configuration, the garment with compression-generating sections according to the present invention can shape a wearer's body into a favorable silhouette by smoothing sagging skin and also can keep the silhouette even when the wearer moves, while giving less tightened feeling to the wearer. The garment with compression-generating sections according to the present invention can smooth sagging skin and wrinkles in, e.g., above-knee regions, the upper arms, the back, and the like of a wearer, and also can keep the shaped state, so that it can provide a slimmer body silhouette.

Brief Description of Drawings

[0008]

[FIG. 1] FIGs. 1A and 1B show leggings 100 according to a first embodiment of the present invention. FIG. 1A is a front view of the leggings 100, and FIG. 1B is a rear view of the leggings 100.

[FIG. 2] FIGs. 2A and 2B schematically illustrate how compressions are applied by the leggings 100 according to the first embodiment. FIG. 2A is a schematic view showing the state where the leggings 100 are worn, and FIG. 2B is a schematic view showing the state where conventional leggings having a body-shaping function are worn.

[FIG. 3] FIGs. 3A to 3F show variations of compression-generating sections in the present invention.

[FIG. 4] FIGs. 4A and 4B show results of a wearing evaluation test on the leggings according to the embodiment of the present invention.

[FIG. 5] FIG. 5 is a rear view showing a shirt 200 according to a second embodiment of the present invention.

[FIG. 6] FIG. 6 shows results of a wearing evaluation test on the shirt 200 according to the second embod-

iment.

[FIG. 7] FIG. 7 show results of a wearing evaluation test on a shirt according to a modified example of the second embodiment.

[FIG. 8] FIG. 8 is a rear view showing a bodysuit 300 according to a third embodiment of the present invention.

[FIG. 9] FIG. 9 illustrates how to put on the bodysuit 300 according to the third embodiment.

[FIG. 10] FIG. 10 illustrates an effect obtained by wearing the bodysuit 300 according to the third embodiment. In FIG. 10, (a) is a rear view showing a naked state, (b) is a rear view showing the state where the bodysuit 300 according to the third embodiment is worn, and (c) is a rear view showing the state where a conventional bodysuit is worn.

[FIG. 11] FIGs. 11A and 11B schematically show the distribution of Langer's lines on the human body. FIG. 11A is a front view partially showing the human body, and FIG. 11B is a rear view partially showing the human body.

Mode for Carrying out the Invention

[0009] The garment with compression-generating sections according to the present invention will be described below with reference to illustrative examples. It is to be noted, however, that the present invention is by no means limited to or restricted by the following illustrative examples.

(First Embodiment)

[0010] FIGs. 1A and 1B show leggings 100 according to the first embodiment of the present invention. FIG. 1A is a front view of the leggings 100, and FIG. 1B is a rear view of the leggings 100. The leggings 100 of the present embodiment, which are a garment with compression-generating sections, include: body sections 101 each including a portion that is tubular when the leggings 100 are worn; and compression-generating sections 102. The term "compression" as used herein means a pressure applied to a body region of a wearer covered with the garment when the garment is worn. The leggings 100 of the present embodiment are legwear that is provided with a crotch section and covers from the thighs to below-knee regions as well as the waist of a wearer.

[0011] In the present embodiment, the leggings 100 are formed by sewing the body sections 101 and the compression-generating sections 102 together. The body sections 101 are stretchable so as to fit a wearer's body. The compression-generating sections 102 have lower stretchability than the body sections 101 at least in an insertion direction. Among the body regions covered with the leggings 100, skin sagging is liable to occur in above-knee regions. The compression-generating sections 102 are disposed in such a manner that, when the leggings 100 are worn, they are located above the above-knee regions where the skin sagging occurs and extend in directions along the Langer's lines that are in the above-knee regions on the front side of the thighs. The term "insertion direction" as used herein means different directions depending on which portions of the garment include the compression-generating sections. When the compression-generating sections are disposed in a bodice of an upper body garment, the insertion direction is a vertical direction. When the compression-generating sections are disposed in sleeves of an upper body garment, the insertion direction is a sleeve length direction. In the case of a bottom garment, the insertion direction is a direction along which a wearer inserts the legs when putting on the bottom garment, i.e., the direction extending from a waist portion toward leg edges in the bottom garment.

[0012] FIGs. 11A and 11B schematically show the distribution of Langer's lines on the human body. FIG. 11A is a front view partially showing the human body, and FIG. 11B is a rear view partially showing the human body. Lines shown on the human body diagrams are Langer's lines. "Langer's lines", which are also called skin cleavage lines, are lines indicating the directions of straight lines formed by numerous holes obtained when a cadaver are punctured with a conical tool having a circular-shaped tip that is 2 mm in diameter. Langer's lines coincide with the alignment of the skin connective tissue, and the skin exhibits higher extensibility in directions orthogonal to the Langer's lines (C. Langer). The inventors of the present invention found out through studies that the skin moves relatively less smoothly in the direction along the Langer's lines and relatively smoothly in the direction orthogonal to the Langer's lines.

[0013] In the present invention, the compression-generating sections 102 are disposed so as to extend in directions along the Langer's lines. With this configuration, when a wearer puts on the leggings 100, the compression-generating sections 102 push the wearer's skin upward, i.e., in the direction orthogonal to the Langer's lines that pass around the above-knee regions. The compression-generating sections 102 have lower stretchability than the body sections at least in the insertion direction (the leg insertion direction when putting on the leggings). With this configuration, the compression-generating sections 102 can lift up sagging skin and wrinkles in the above-knee regions efficiently. Also, in the state where the leggings 100 are worn, the compression-generating sections 102, which are disposed in such a manner that the longitudinal directions thereof extend along the Langer's lines, can prevent the leggings 100 from slipping down. Thus, the sagging skin and wrinkles in the above-knee regions that have been lifted up when the wearer put on the leggings 100 can be held firmly. Therefore, the leggings 100 can shape a wearer's body into a favorable silhouette by smoothing the sagging skin and also can keep the silhouette even when the wearer moves. Moreover, it is not necessary to provide the compression-generating sections 102 so as to extend over the entire

circumferences of the tubular portions of the body sections 101. This can reduce tightened feeling given to the wearer.

[0014] FIGs. 2A and 2B schematically illustrate how compressions are applied by the leggings 100 according to the present embodiment. FIG. 2A is a schematic view showing the state where the leggings 100 are worn, and FIG. 2B is a schematic view showing the state where conventional leggings having a body-shaping function are worn. In FIGs. 2A and 2B, the arrows indicate the direction and the level of compression. The width of the arrow is directly proportional to the compression level. As shown in FIG. 2B, in the conventional leggings, compressions are applied so as to tighten the entire circumference in the circumferential direction, and the conventional leggings are designed so that, for example, the compression level is changed in a stepwise manner in order to apply stronger compressions to a part where the body shaping is desired (gradation effect). However, the conventional leggings, which tighten the entire circumferences of the legs in the circumferential direction, may give tightened feeling to a wearer, and also, edge parts of the leggings may dig into the wearer's skin in the case where the wearer has a high degree of skin sagging. In contrast, as shown in FIG. 2A, according to the leggings 100 of the present embodiment, the compression is increased at portions where the compression-generating sections 102 are disposed. As a result of diligent studies, the inventors of the present invention found out that, by providing the compression-generating sections 102 in above-knee regions where skin sagging and wrinkles are liable to occur so as to extend in directions along the Langer's lines and lifting up sagging skin and wrinkles when putting on the leggings 100, a body-shaping function can be obtained without tightening the entire circumferences of the legs in the circumferential direction. On the basis of this finding, a tightening pressure is not applied in the circumferential direction to regions with a high degree of skin sagging as in the conventional body-shaping garment. This brings about an advantageous effect that, when the leggings are worn, the difference in height on the wearer's body line is less liable to be formed and edge parts of the leggings are less liable to dig into the wearer's skin.

[0015] In the present invention, the material of the body sections 101 is not particularly limited as long as it is stretchable so as to fit a wearer's body. The material of the body sections 101 may be a warp knitted fabric or a circular knitted fabric, for example.

[0016] In the present embodiment, the compression-generating sections 102 preferably have an anti-slip function. As an example of the anti-slip function, the compression-generating sections 102 preferably are configured so that, for example, when the leggings 100 are worn, a frictional force per unit area between each compression-generating section 102 and a wearer's body region in contact therewith is relatively large as compared with a frictional force per unit area between each body section 101 and a wearer's body region in contact therewith. With this configuration, when the wearer puts on the leggings 100, the compression-generating section 102 can lift up the sagging skin and wrinkles in, e.g., the above-knee regions utilizing the frictional force, and besides, the compression-generating section 102 can hold the sagging skin and wrinkles that have been lifted up without slipping down.

[0017] In the present embodiment, the frictional force is not particularly limited as long as it is sufficient to lift up the sagging skin and wrinkles in, e.g., the above-knee regions when the wearer puts on the leggings 100 and also sufficient to hold the sagging skin and wrinkles that have been lifted up. The compression-generating sections 102 may be formed by resin printing or using a nanomaterial or the like, for example.

[0018] The compression-generating sections 102 may be parts of the knitted fabric constituting the body sections 101. In this case, the compression-generating sections 102 may be provided by changing the knit structure of the body sections 101 only in portions corresponding to the compression-generating sections 102 or by changing the kind of the yarn only in the portions corresponding to the compression-generating sections 102.

[0019] In the present embodiment, the compression-generating sections 102 are stretched in the thigh width direction when the leggings 100 are worn. Thus, the compression-generating sections 102 preferably are formed using a fabric that exhibits an anti-slip effect even in a stretched state. Such a fabric may be, for example, a knitted fabric including: a stretchable base structure formed by warp knitting; and a float stitch (pile) structure formed by a float yarn that is composed of long or short fibers and shows increase in surface area when bent under a compressive force. In this knitted fabric, the float yarn is shifted in different directions every time the float yarn is interwoven with the base structure along the warp direction, and the float stitch structure is exposed on the external side of the base structure, excluding both ends of the float stitch structure in the width direction, in which the float yarn is interwoven with the base structure (this knitted fabric is also referred to as "material W" hereinafter). In this material W, the float yarn is not interwoven with the base structure at portions other than both the ends thereof in the direction orthogonal to the knitting direction of the knitted fabric, and the float stitch structure excluding both the ends thereof is exposed to the external side of the base structure. Thus, when the material W is stretched in the warp (knitting) direction and thus shrinks in the width direction, the float stitch structure at portions other than both the ends thereof interwoven with the base structure bents and thus is brought into a state where the float stitch structure bulges out on the external side of the knitted fabric. Thus, the material W can maintain a large surface area even when stretched in the warp direction. Accordingly, the material W can exhibit an anti-slip effect by causing a large frictional force when it is in contact with the skin.

[0020] The material W is preferable also for the reason that, by disposing each of the compression-generating sections 102 formed of the material W in such a manner that the warp direction thereof coincides with or extends along the thigh width direction of the body section 101, a high frictional force is caused between the compression-generating section 102 and the skin in contact therewith even when the leggings 100 are worn and the compression-generating sections 102 are in a stretched state. Part or the whole of the float yarn may be a so-called nanofiber composed of long or short fibers and having an outer diameter of 1 μm or less. More specifically, the float yarn may be a nanofiber formed by splitting or melt spinning, for example. This increases the frictional force greatly, so that the material W can exhibit a higher anti-slip effect.

[0021] In the present embodiment, the compression-generating sections 102 are formed by attaching separate members to the body sections 101. It is to be noted, however, that the present invention is not limited thereto. For example, the compression-generating sections 102 may be formed by applying a resin to portions of the body sections 101 to lower the stretchability of the portions, or by changing the structure of portions of the body sections 101 to lower the stretchability of the portions. Further, the compression-generating sections 102 also may be formed utilizing discharge printing or etching. Still further, the compression-generating sections 102 also may be formed by changing the stretchability of a knitted fabric according to a method such as partially changing the kind of the yarn used to form the knitted fabric.

[0022] As described above, according to the present invention, sagging skin and wrinkles can be lifted up and held by the compression-generating sections. Thus, the sagging skin and the like can be smoothed effectively, whereby the wearer's body can be shaped into a favorable silhouette. Furthermore, according to the present invention, the silhouette can be kept even when the wearer moves, while giving less tightened feeling given to the wearer.

[0023] As shown in FIG. 1A, in the present embodiment, the compression-generating sections 102 are disposed in above-knee portions on the front side of thigh portions of the body sections 101. It is to be noted, however, that the present invention is not limited thereto. As long as the compression-generating sections 102 are disposed so as to extend in directions along the Langer's lines, they may extend to the vicinity of the groin or to the back side of the thighs.

[0024] FIGs. 3A to 3F show variations of the compression-generating sections 102 in the leggings of the present invention. In the present invention, each of the compression-generating sections 102 may be formed as a single strip member, as shown in FIGs. 3A and 3D. Alternatively, the compression-generating sections 102 may be formed by disposing a plurality of strip members so as to be spaced apart from each other, as shown in FIGs. 3B, 3C, 3E, and 3F. Preferably, the compression-generating sections 102 are formed by disposing a plurality of strip members so as to be spaced apart from each other as shown in FIGs. 3B, 3C, 3E, and 3F, because the compression-generating sections 102 can follow the movement of the skin more easily. In FIG. 3D, the compression-generating sections 102 are formed so as to extend along the Langer's lines immediately above the knees, and they extend only to lower positions as compared with the compression-generating sections 102 shown in FIG. 3A. When the compression-generating sections 102 are formed so as to extend along the Langer's lines in a broader region as shown in FIG. 3A, it is possible to obtain a higher compression, in other words, a stronger lift-up force, as compared with the case of the compression-generating sections 102 shown in FIG. 3D. Thus, by adjusting the manner in which the compression-generating sections 102 extend along the Langer's lines, it is possible to provide the compression-generating sections that generate different compressions using the same material. Each of the compression-generating sections 102 may be formed in a linear shape, or may be formed in a curved shape as shown in FIG. 3F. Although the present embodiment is directed to an example where each of the compression-generating sections 102 is formed in a strip shape, the present invention is not limited thereto. For example, the compression-generating sections may be formed in various shapes with decorative designs, such as floral patterns and geometric patterns.

[0025] Each of the compression-generating sections preferably has a width from 1.5 cm to 8 cm, more preferably from 3 cm to 7 cm. Each of the compression-generating sections may be formed so as to have a uniform width, or the width of the compression-generating section may vary depending on position.

[0026] In the present embodiment, the leggings 100 preferably are so-called "next to the skin type" to be in direct contact with the skin when worn, in order to allow a wearer to put on the leggings 100 while lifting up sagging skin in above-knee regions with the leggings 100 being in close contact with the legs. It is to be noted, however, that the present invention is not limited thereto, and the leggings may be a type of leggings to be worn on stockings or the like, for example.

[0027] The leggings according to the present embodiment are configured so that a buttock portion thereof includes only the body sections 101. It is to be noted, however, that the present invention is not limited thereto. For example, the present invention can be used in combination with a girdle having a function of lifting up the buttocks. For example, compression-generating sections further may be disposed on the back side of the body sections 101 in such a manner that, when the leggings 100 are worn, the compression-generating sections are located above the apices of the buttocks so as to extend along the Langer's lines in the buttocks. These compression-generating sections can lift the buttocks upward and hold the buttocks in the upper part of the but-

tocks. With this configuration, the buttocks can be lifted up entirely with a lift-up force generated in the upper part of the buttocks, which prevents flabby flesh from remaining in the gluteal fold. Thus, the buttocks of the wearer can be lifted up effectively, so that the buttocks of the wearer can be shaped into a more favorable silhouette.

(Objective Wearing Evaluation 1)

[0028] The leggings 100 according to the first embodiment of the present invention were produced, and a wearing evaluation test was conducted. The leggings 100 used in the present evaluation were configured so that, as the compression-generating sections, three strip members are disposed so as to be spaced apart from each other in each body section, as shown in FIG. 3C. In the present evaluation, the compression-generating sections 102 were formed using the material W In the present evaluation, each test user wearing the leggings 100 conducted predetermined exercise, and the position of the skin around one of the knees was observed immediately after she put on the leggings 100 (before the exercise) and after the exercise. The details of the exercise were as follows: bringing one of the thighs up and putting the hands together under the thigh (three sets in total, with one time each for the right and left thighs as one set); knee bends (three times); and a forward bend and a back bend (one time each). Further, as a comparative example, the same test user wore leggings formed of the same material as the leggings 100 and not provided with compression-generating sections (i.e., the leggings composed of body sections 101 only), and in the same manner as in the above, the position of the skin around the knee was observed immediately after she put on the leggings and after the exercise.

[0029] The results thereof are shown in FIGs. 4A and 4B. In each of FIGs. 4A and 4B, the diagram on the left shows a naked state, the diagram in the middle shows the state where the leggings of the comparative example were worn, and the diagram on the right shows the state where the leggings 100 of the present invention were worn. These diagrams all show the states observed after the exercise. FIGs. 4A and 4B show the results obtained by different test users. The test user shown in FIG. 4A had only slight skin sagging in the above-knee regions. Thus, there was not much difference between the states after the exercise. However, it can be seen that, when the leggings 100 of the present invention were worn, the position of the skin around the knee was lifted up entirely, as compared with the naked state. In contrast, when the leggings of the comparative example were worn, the position of the skin in the above-knee region became lower. This is presumably because the leggings of the comparative example got loose during the exercise, and the skin being pressed under the compression thus moved downward. On the other hand, the test user shown in FIG. 4B showed more notable differences in the position of the skin around the knee among the respective states, as compared with the test user shown in FIG. 4A. This is presumably because the test user shown in FIG. 4B had a higher degree of skin sagging in the above-knee regions. Regarding the test user shown in FIG. 4B, it can be seen that, when she wore the leggings 100 of the present invention, the skin around the knee, especially the skin in the above-knee region, was lifted up firmly, and the skin that has been lifted up did not move downward after the exercise. These results demonstrate that the leggings 100 of the present invention can shape a wearer's body into a favorable silhouette by lifting up and smoothing sagging skin and also can keep the silhouette even after exercise.

(Subjective Wearing Evaluation 1)

[0030] Test users wore the same leggings as used in the objective wearing evaluation 1. Five test users joined the evaluation. Three out of the five test users commented that the leggings 100 of the present invention were less liable to get loose as compared with the leggings of the comparative example. The other two test users commented that they did not perceive the difference between the leggings 100 of the present invention and the leggings of the comparative example. Further, all the five test users commented that the leggings 100 of the present invention gave much less tightened feeling as compared with the leggings of the comparative example. Still further, all the five test users commented that, when they wore the leggings 100 of the present invention, they could lift up their knees more smoothly, as compared with the cases where they wore the leggings of the comparative example and they were in the naked state. These results demonstrate that, while the leggings 100 of the present invention allow a wearer to move easily and give less tightened feeling to the wearer, they are less liable to get loose and can keep a favorable silhouette.

[0031] The above results may be explained as follows. Specifically, the skin on body regions to be wrinkled accompanying the joint motion such as bending tends to move away from the joint, whereas the skin on body regions to be stretched tends to gather around the joint. In a region around each knee joint, when the knee joint is bent, wrinkles on the skin on the front side of the knee joint are smoothed, so that the skin often becomes taut. On the other hand, on the back side of the knee joint, the skin tends to be taut when the knee joint is straightened at the time of, e.g., kicking the ground. It is considered that the above-described taut states of the skin narrow the movable range of the knee joints and hinder the movement. On this account, it is considered that the test users could move more smoothly because the leggings 100 of the present invention alleviated the taut states of the skin to broaden the movable range of the knee joints.

(Second Embodiment)

[0032] FIG. 5 shows a shirt 200 according to the sec-

ond embodiment of the present invention. FIG. 5 is a rear view of the shirt 200. The shirt 200 of the present embodiment, which is a garment with compression-generating sections, is a long-sleeved shirt (also referred to simply as "shirt" hereinafter) including sleeve sections 201 as body sections that are tubular when the shirt 200 is worn. As shown in FIG. 5, the shirt 200 of the present embodiment includes a bodice section 203 and a pair of sleeve sections 201, and compression-generating sections 202 are provided in the sleeve sections. For the body sections (sleeve sections) 201 and the compression-generating sections 202, the same materials as those described in the first embodiment can be used. Although the present embodiment is described with reference to an illustrative example where the garment with compression-generating sections is a long-sleeved garment, the present invention is not limited thereto.

[0033] In the present embodiment, body regions where skin sagging occurs are the upper arms, and the compression-generating sections 202 are disposed so as to extend in directions along the Langer's lines above (i.e., the side closer to the torso) the upper arms. Thus, when a wearer puts her arms through the sleeves when putting on the shirt 200, sagging skins in the upper arms are moved from above the elbows toward the shoulders (in the direction orthogonal to the Langer's lines). In the state where the shirt 200 is worn, since the compression-generating sections 202 are disposed in such a manner that the longitudinal directions thereof extend along the Langer's lines, the sleeve sections 201 are not displaced easily, so that the sagging skin in the upper arms that have been moved upward when putting on the shirt 200 can be held firmly. Accordingly, the shirt 200 can smooth the sagging skin in the upper arms to make a slimmer silhouette, and also can keep the silhouette even when the wearer moves. It is not necessary to provide the compression-generating sections 202 so as to extend over the entire circumferences of the tubular sleeve sections 201. Thus, the shirt 200 gives less tightened feeling to a wearer.

[0034] In the present invention, the material of the bodice section 203 is not particularly limited. The bodice section 203 may be formed of a stretchable material so as to fit a wearer's body similarly to the sleeve sections 201, or may be formed of any other material.

[0035] Although the present embodiment has been described with reference to the illustrative example where the garment with compression-generating sections is the long-sleeved shirt 200, the present invention is not limited thereto. In the present invention, the garment may be a short-sleeved shirt or outerwear such as a jacket, for example. These garments also can exhibit the same effect as the long-sleeved shirt 200 according to the present embodiment.

(Objective Wearing Evaluation 2)

[0036] Shirts 200 according to the second embodiment of the present invention were produced, and a wearing evaluation test was conducted. The shirts 200 used in the present evaluation were configured so that, as the compression-generating sections 202, three strip members are disposed so as to be spaced apart with each other in each body section as shown in FIG. 5. In the present evaluation, the compression-generating sections 102 were formed using the material W. In the present evaluation, two types of body sections (sleeve sections) 201, namely, body sections that provide high compression and body sections that provide low compression, were produced, and for each type of body sections, the compression-generating sections 202 were disposed in two different ways, namely, closer to the elbows or closer to the shoulders. In the present evaluation, a test user wearing the shirt 200 conducted predetermined exercise, and the position of the skin around one of the upper arms was observed from the back side of the test user immediately after she put on the shirt 200 (before the exercise) and after the exercise. The details of the exercise were as follows: bringing one of the thighs up and putting the hands together under the thigh (three sets in total, with one time each for the right and left thighs as one set); a forward bend and a back bend (one time each); and moving one of the arms up and down in a circle (one time each for the right and left arms). Further, as a comparative example, the same test user wore a shirt formed of the same material as the shirt 200 and not provided with compression-generating sections, and in the same manner as in the above, the position of the skin around the upper arm was observed immediately after she put on the shirt and after the exercise.

[0037] The results thereof are shown in FIGs. 6 and 7. FIG. 6 shows the results of the evaluation obtained regarding the shirt including the body sections (sleeve sections) 201 that provide weak compression. FIG. 7 shows the results of the evaluation obtained regarding the shirt including the body section (sleeve sections) 201 that provide strong compression. In each of FIGs. 6 and 7, (a) shows a naked state, (b) shows the states where the shirt of the comparative example was worn, (c) shows the states where the shirt 200 with the compression-generating sections 202 disposed closer to the elbows was worn, and (d) shows the states where the shirt 200 with the compression-generating sections 202 disposed closer to the shoulders was worn. In each of FIGs. 6 and 7, the diagrams on the left each show the state immediately after the test user put on the shirt (before the exercise), and the diagrams on the right each show the state after the exercise. In FIGs. 6 and 7, the compression-generating sections 202 are indicated with dashed lines.

[0038] As can be seen from the drawings, when the shirts of the present invention were worn, the position of the skin in the upper arm was lifted up as compared with the naked state and the state where the shirt of the comparative example was worn, regardless of the level of the compression provided by the body sections (sleeve sections) 201. In particular, when the shirt with the compres-

sion-generating sections disposed in the upper side (closer to the shoulders) of the body sections was worn, the position of the skin in the upper arm was lifted further upward. Also, it can be seen that, when the shirts of the present invention were worn, the position of the skin did not move downward even after the exercise. These results demonstrate that the shirt 200 of the present invention can shape a wearer's body into a favorable silhouette by lifting up and smoothing sagging skin and also can keep the silhouette after exercise.

(Third Embodiment)

[0039] FIG. 8 shows a bodysuit 300 according to the third embodiment of the present invention. FIG. 8 is a rear view of the bodysuit 300. The bodysuit 300 of the present embodiment, which is a garment with compression-generating sections, includes: a bodysuit body section 301 that is tubular when the bodysuit 300 is worn; and compression-generating sections 302. In the bodysuit 300, the compression-generating sections 302 are disposed in such a manner that, when the bodysuit 300 is worn, they extend in directions along Langer's lines that pass near the inferior angles of the scapulae. For the bodysuit body section 301 and the compression-generating sections 302, the same materials as those described in the first embodiment can be used.

[0040] A preferable manner to put on this bodysuit 300 will be described below. FIG. 9 illustrates how to put on the bodysuit 300 in chronological order from the left. As shown in FIG. 9, when a wearer puts on the bodysuit 300, it is preferable to insert the legs and pull up the bodysuit 300 along the back while keeping the state where the bodysuit 300 is not apart from (i.e., in close contact with) the back. By putting on the bodysuit 300 in this manner, the flesh on the back is lifted up entirely, and the flesh on the back that has been lifted up is held by the compression-generating sections 302 located near the inferior angles of the scapulae. Thus, the silhouette of the back can be shaped effectively.

[0041] FIG. 10 illustrates an effect obtained by wearing the bodysuit 300 according to the third embodiment. In FIG. 10, (a) is a rear view showing a naked state, (b) is a rear view showing the state where the bodysuit 300 according to the third embodiment was worn, and (c) is a rear view showing the state where a conventional bodysuit without compression-generating sections was worn. When the conventional bodysuit without compression-generating sections is worn, although a slight body-shaping effect is obtained by the tightening force of the bodysuit itself, sagging skin on the back still remains in the state of being tightened even after the bodysuit is worn. In contrast, the bodysuit 300 according to the third embodiment can lift up and hold sagging skin on the back, and thus can shape the wearer's body into a silhouette in which the sagging skin is less conspicuous. Furthermore, it is not necessary to provide a tightening section that tightens the entire waist, and the compression-generating sections can hold the flesh on the back in the upper part of the back. Therefore, the bodysuit 300 according to the third embodiment can prevent the formation of difference in height on the wearer's body line caused when edge parts of the bodysuit 300 dig into the skin, and also gives less tightened feeling to the wearer.

[0042] The present invention has been described above with reference to specific examples thereof, namely, leggings, a long-sleeved shirt, and a bodysuit. It is to be noted, however, that the garment with compression-generating sections according to the present invention is not limited to those given as the specific examples, and can be embodied in various forms. For example, the present invention is applicable not only to the garments described in the above embodiments, but also to various other garments including tank tops, short-sleeved shirts, garments such as upper body garments that can be put on and taken off using buttons etc., and underwear.

Industrial Applicability

[0043] The garment with compression-generating sections according to the present invention can shape a wearer's body into a favorable silhouette by smoothing sagging skin and also can keep the silhouette even when the wearer moves, while giving less tightened feeling to the wearer. The present invention can be embodied in various forms, and is applicable to various garments such as, for example, body-shaping garments other than those described in the above embodiments, sportswear, outerwear, and medical garments (e.g., supporters).

Explanation of Reference Numerals

[0044]

100:	garment with compression-generating sections (leggings)
200:	garment with compression-generating sections (long-sleeved shirt)
300:	garment with compression-generating sections (bodysuit)
101, 301:	body section
201:	body section (sleeve section)
102, 202, 302:	compression-generating section
203:	bodice section

Claims

1. A garment with a compression-generating section, the garment comprising:

at least one body section comprising a portion that is tubular when the garment is worn; and
at least one compression-generating section,
wherein the body section is stretchable so as to fit a wearer's body,

the compression-generating section is disposed in such a manner that, when the garment is worn, the compression-generating section is located above a body region where skin sagging occurs and extends in a direction along Langer's lines, and
the compression-generating section has lower stretchability than the body section at least in an insertion direction in order to increase compression provided by a portion of the garment where the compression-generating section is disposed.

2. The garment according to claim 1, wherein
when the garment is worn, the compression-generating section causes a larger frictional force per unit area than the body section with respect to the wearer's body.

3. The garment according to claim 1 or 2, wherein
the garment is a bottom garment, and
the compression-generating sections are disposed in above-knee portions of the bottom garment.

4. The garment according to claim 1 or 2, wherein
the garment is an upper body garment, and
the compression-generating sections are disposed in such a manner that, when the upper body garment is worn, the compression-generating sections extend in directions along Langer's lines that pass near inferior angles of scapulae.

5. The garment according to claim 1 or 2, wherein
the garment is an upper body garment, and
the compression-generating sections are disposed in upper arm portions of the upper body garment.

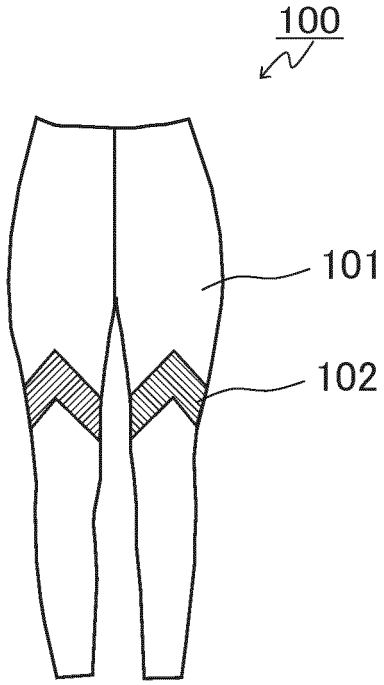

FIG. 1A

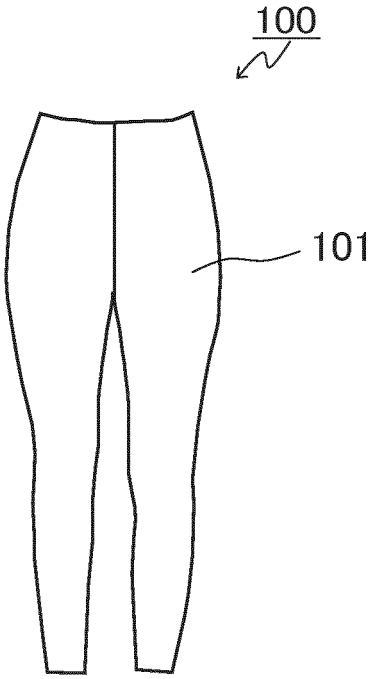

FIG. 1B

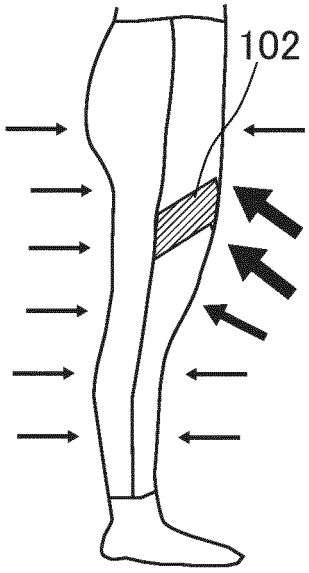

FIG. 2A

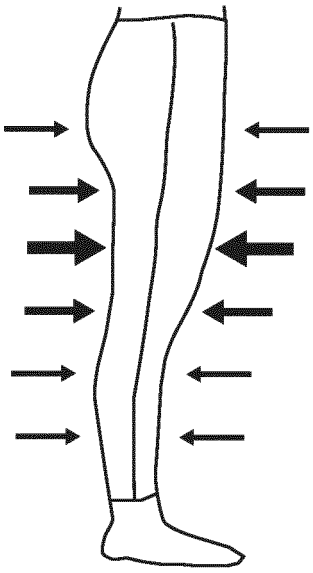

FIG. 2B

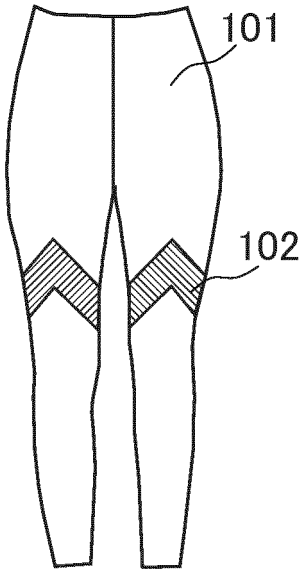

FIG. 3A

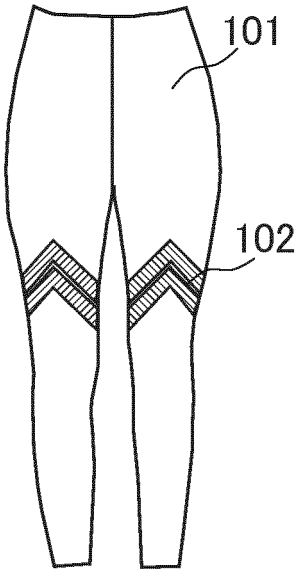

FIG. 3B

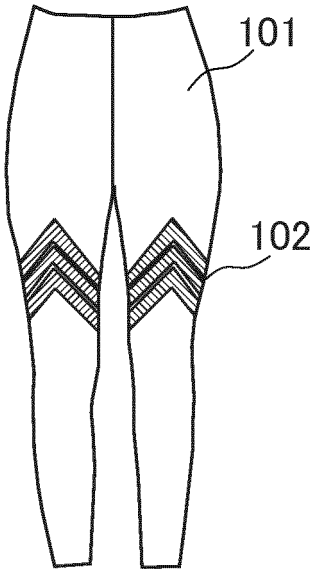

FIG. 3C

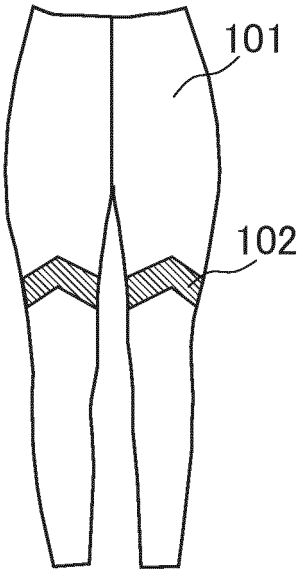

FIG. 3D

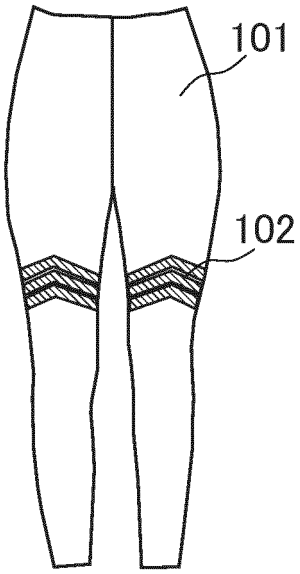

FIG. 3E

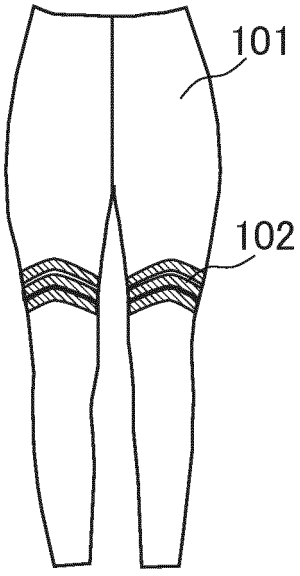

FIG. 3F

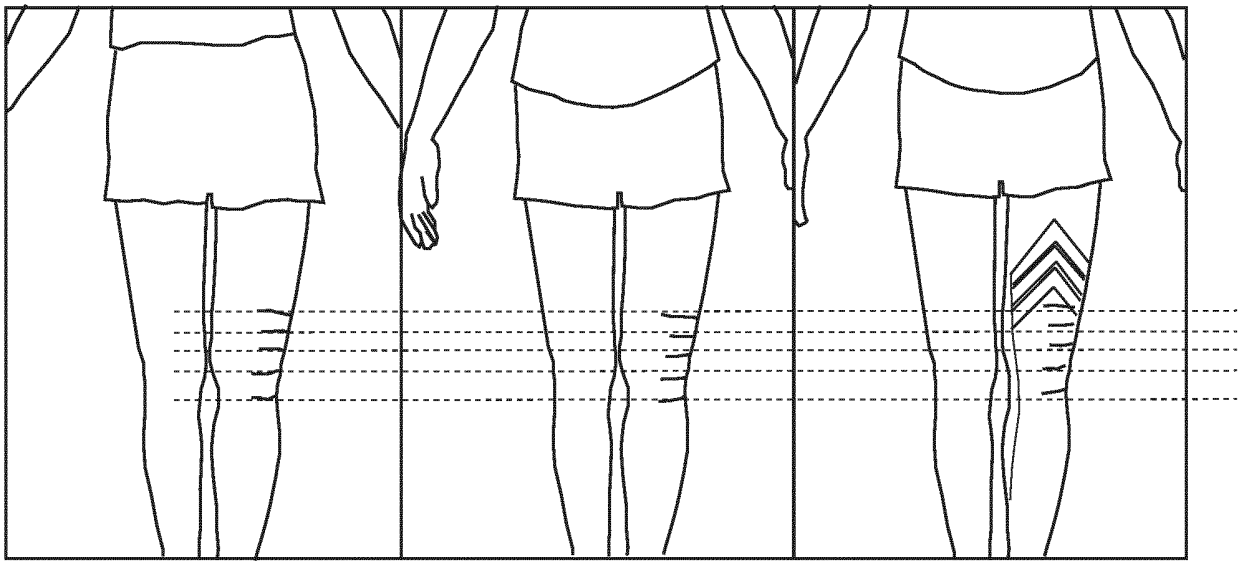

FIG. 4A

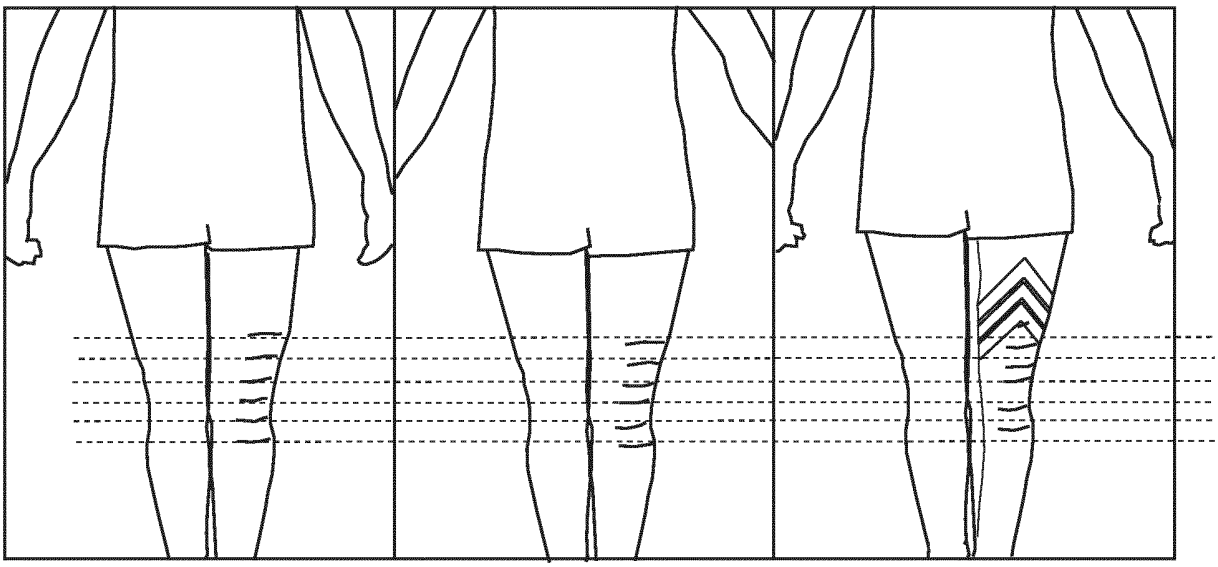

FIG. 4B

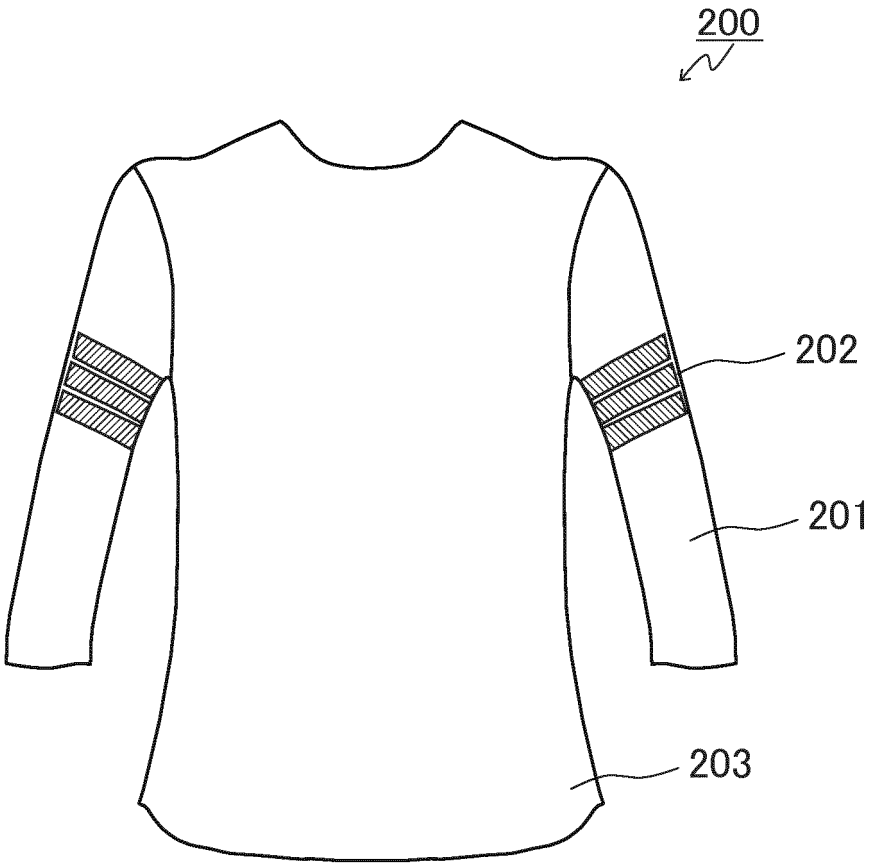

FIG. 5

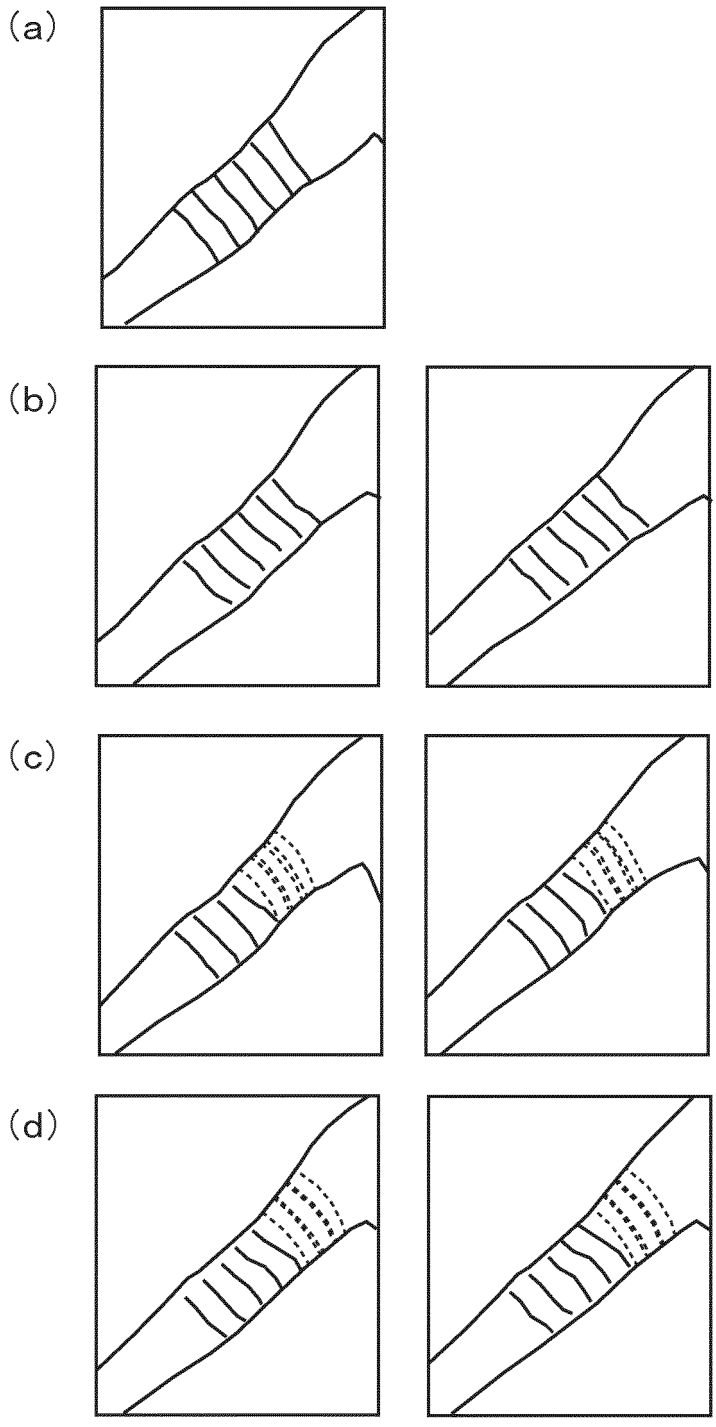

FIG. 6

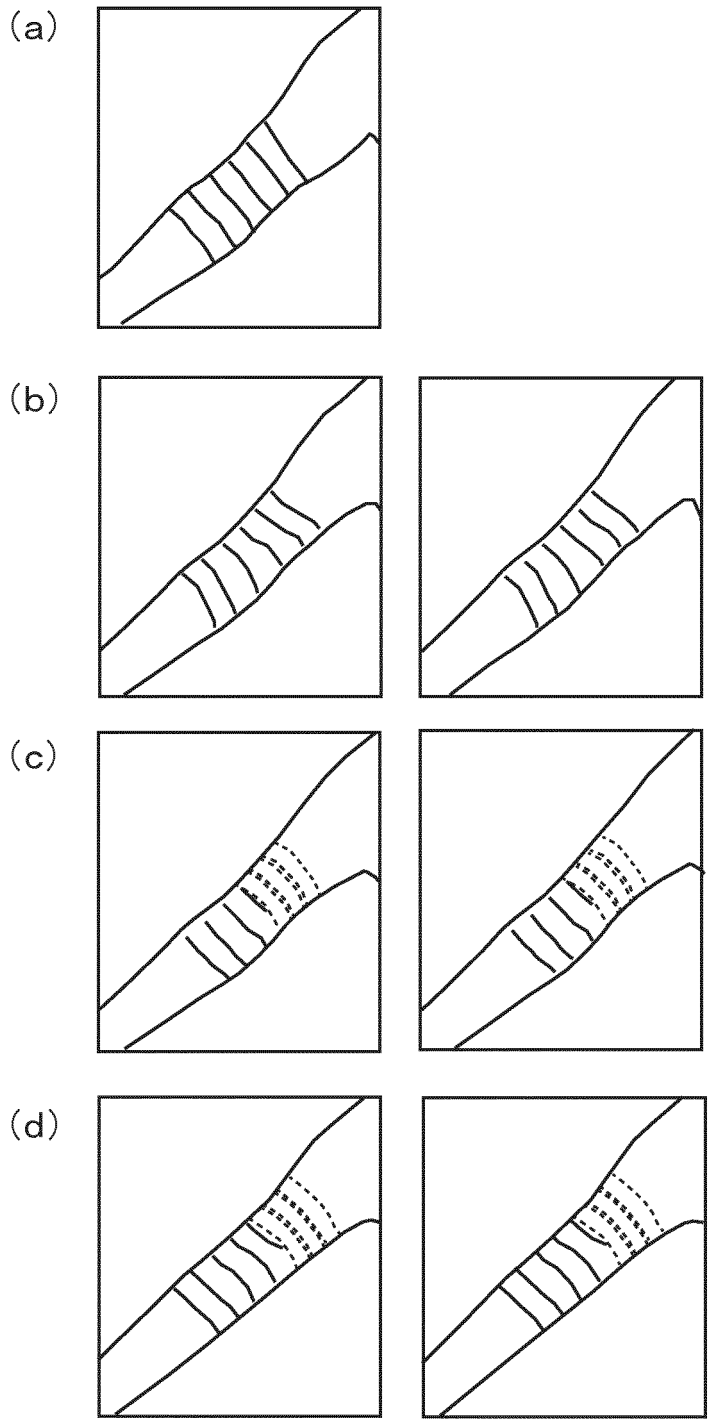

FIG. 7

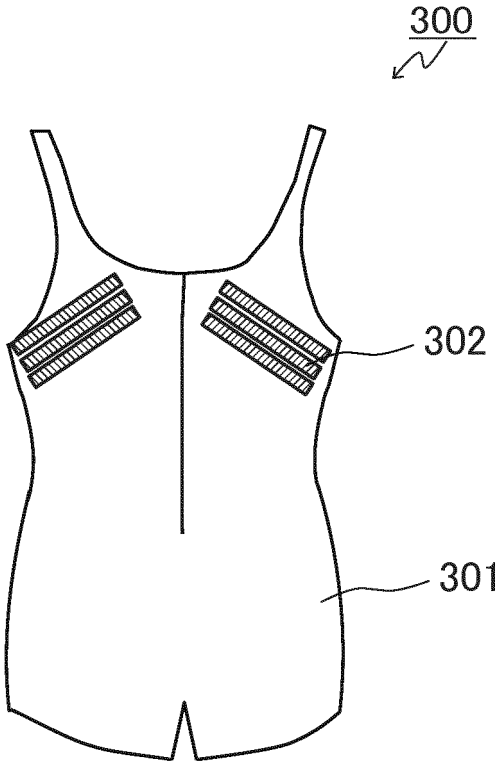

FIG. 8

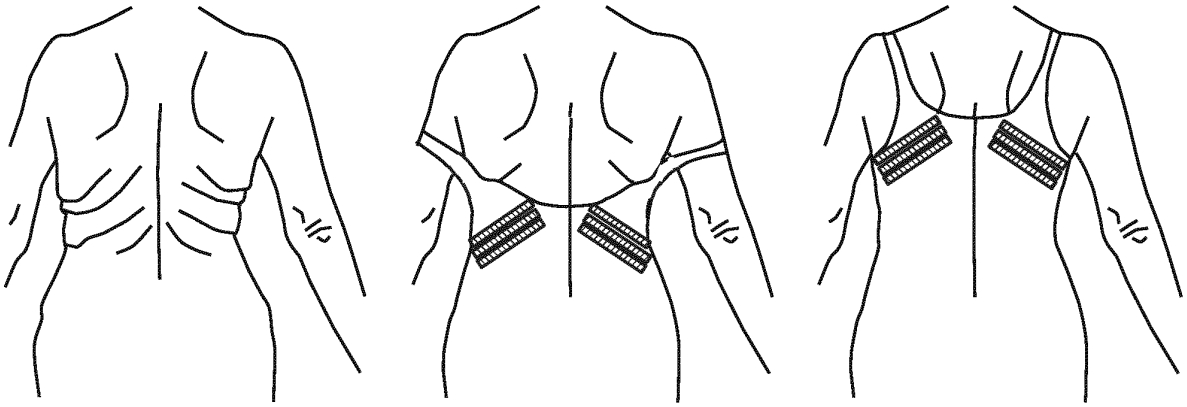

FIG. 9

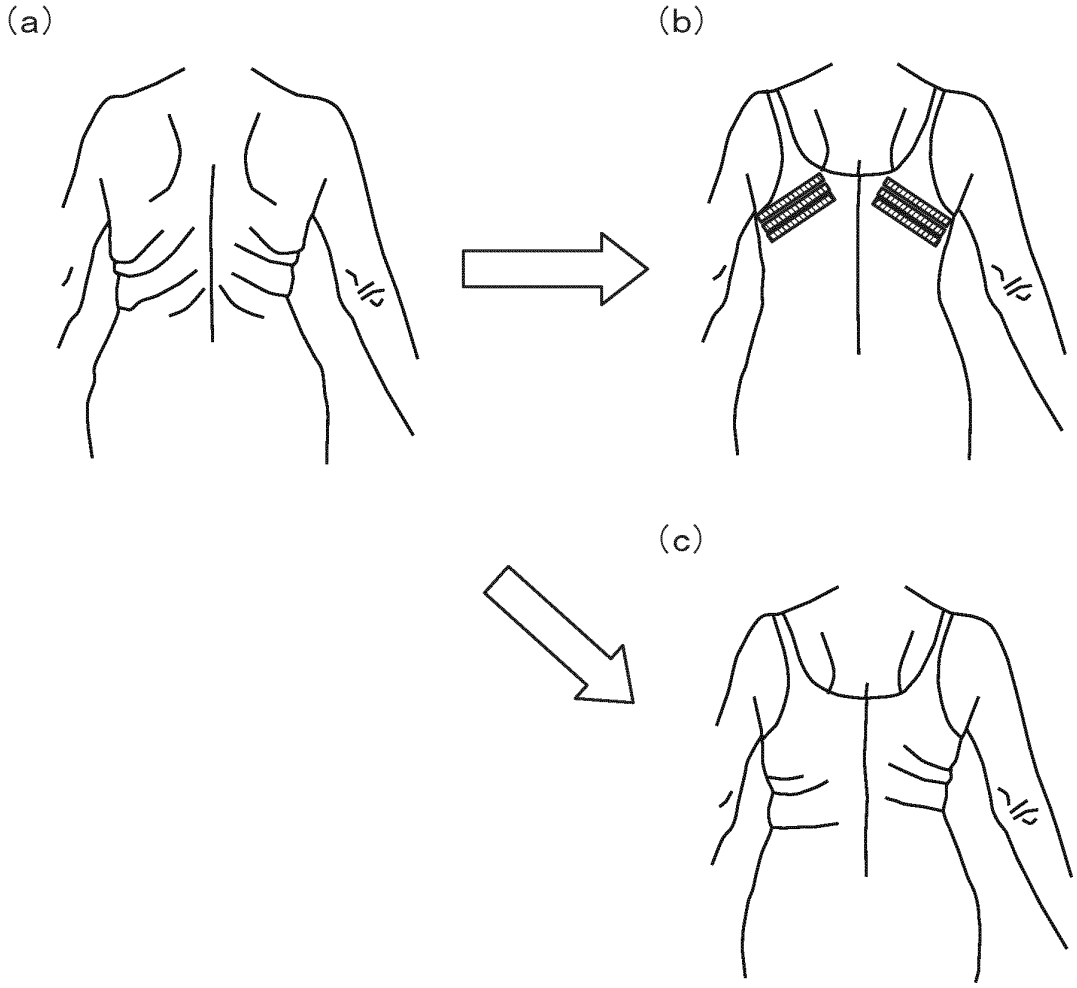

FIG. 10

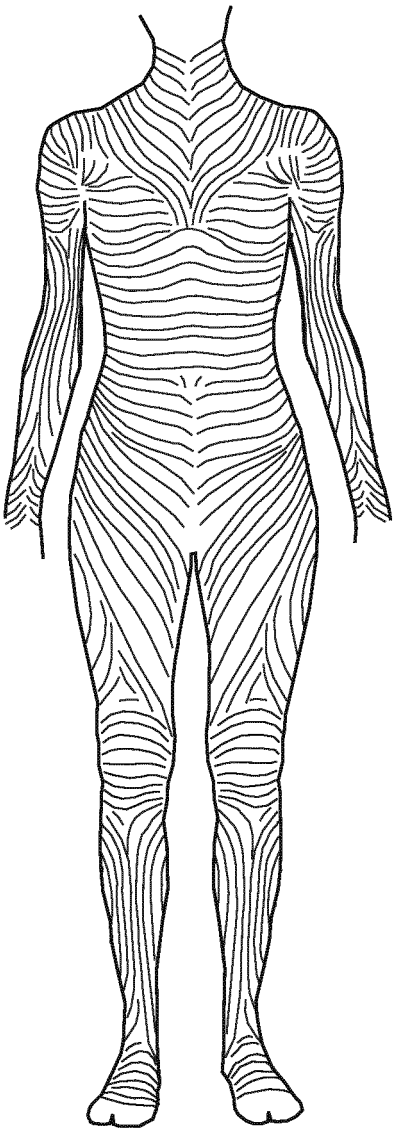

FIG. 11A

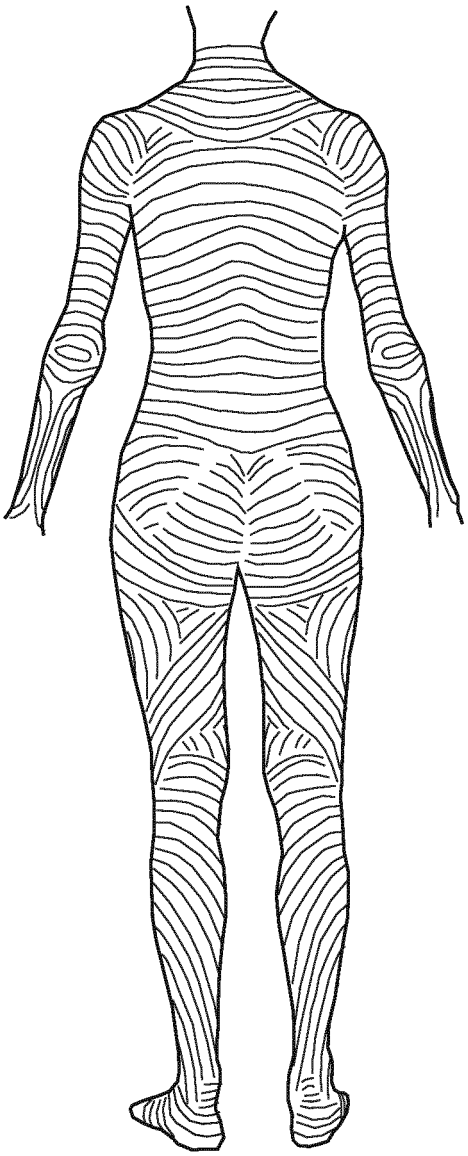

FIG. 11B

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2014/075906

A. CLASSIFICATION OF SUBJECT MATTER
A41B11/00(2006.01)i, *A41B9/06*(2006.01)i, *A41D13/00*(2006.01)i, *A41D27/00*(2006.01)i

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)
A41B11/00, A41B9/06, A41D13/00, A41D27/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2014
Kokai Jitsuyo Shinan Koho 1971-2014 Toroku Jitsuyo Shinan Koho 1994-2014

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	WO 2014/049857 A1 (Wacoal Corp., Naoko SUGINO), 03 April 2014 (03.04.2014), paragraphs [0015] to [0020], [0024], [0029]; fig. 1 to 5 (Family: none)	1-2 3-5
Y	JP 2006-118088 A (Kabushiki Kaisha Yada Tadashi), 11 May 2006 (11.05.2006), paragraph [0017]; fig. 4 (Family: none)	3
Y	JP 5569996 B1 (Kabushiki Kaisha i plus), 13 August 2014 (13.08.2014), paragraph [0013]; fig. 1 (Family: none)	4

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

* Special categories of cited documents:
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
14 October, 2014 (14.10.14)	28 October, 2014 (28.10.14)
Name and mailing address of the ISA/ Japanese Patent Office Facsimile No.	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2014/075906

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2003-328202 A (Wacoal Corp.), 19 November 2003 (19.11.2003), paragraphs [0025] to [0032]; fig. 1 (Family: none)	5

Form PCT/ISA/210 (continuation of second sheet) (July 2009)

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2006233344 A **[0003]**