(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 618 804 A1

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 158(3) EPC

(43) Date of publication:
25.01.2006 Bulletin 2006/04

(21) Application number: **04727418.8**

(22) Date of filing: **14.04.2004**

(51) Int Cl.:
A41D 13/00 *(1968.09)*

(86) International application number:
PCT/JP2004/005325

(87) International publication number:
WO 2004/091328 (28.10.2004 Gazette 2004/44)

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL HR LT LV MK

(30) Priority: **15.04.2003 JP 2003110882**
31.10.2003 JP 2003371513

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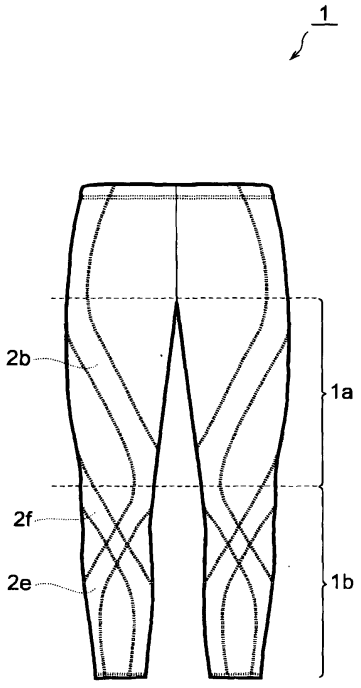
(54) **WEARING ARTICLE WITH CROTCH**

(57) A band-like tightening portion has, at its front side portion 1a corresponding to the front side of a thigh, a thigh front side tightening portion 2b formed obliquely from above to below the front-side portion 1a, at its rear side portion thereof corresponding to a rear side of the thigh, a thigh rear side tightening portion formed obliquely from above to below the rear side portion and, at its front side portion 1b corresponding to the front side of the crus, crus front side tightening portions 2e and 2f formed obliquely from above to below the front side portion 1b. The thigh is supported from front and behind with the thigh front side tightening portion 2b and the thigh rear side tightening portion.

Fig.3



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Description

Technical Field

[0001] The present invention relates to a garment with a crotch and, more particularly, to a sports garment with a crotch

Background Art

[0002] Some conventional sports garment with a crotch has a support portion with a strong tightening force at a predetermined portion of the garment in order to support the motion of the leg muscles. For example, Japanese Patent publication Laid-Open No.10-110306 discloses a garment with a crotch which supports the motion of the muscles by clamping the thigh, knee, and calf with support portions from the left and right. When wearing this garment with a crotch, the support portions suppress the motion of the leg in the left-to-right direction, so the motion of the leg in the back-and-forth direction becomes stable. This garment also has the effect of supporting the bending and stretching motion of the hip joint and knee joint.

[0003] However, in addition to bending and stretching motions, the motions of the lower half of the body include inner and outer pivoting motions, inner and outer rotating motions and the like, and in the case of the garment with a crotch disclosed in the Patent Reference 1, it is difficult to support these other motions, even if bending and stretching motions can be supported.

Disclosure of the Invention

[0004] It is, therefore, an object of the present invention to provide a garment with a crotch which supports the motion of the leg with a good balance.

[0005] In order to achieve the object, the garment with a crotch of the present invention is a garment with a crotch for covering at least part of the lower half of the body, characterized in that a band-like tightening portion at least has, at a front side portion corresponding to the front side of a thigh, a thigh front side tightening portion formed obliquely from above to below the front side portion, and, at a rear side portion corresponding to the rear side of the thigh, a thigh rear side tightening portion formed obliquely from above to below the rear side portion.

[0006] According to the present invention, as the wearer's thigh is clamped by the thigh front side tightening portion and thigh rear side tightening portion which have a large tightening force, muscles in the front and rear sides of the thigh can be supported with a good balance, so that the leg can pivot inwardly and outwardly and rotate inwardly and outwardly easily.

[0007] In the garment with a crotch according to the present invention, the thigh front side tightening portion and the thigh rear side tightening portion preferably respectively incline in the opposite direction with respect to a vertical direction when seen from either a front side or rear side. Furthermore, the thigh front side tightening portion and thigh rear side tightening portion in the garment with a crotch of the present invention preferably respectively incline in the same direction with respect to a vertical direction when seen from either the front side or rear side; in this case, it is desirable that the thigh front side tightening portion and the thigh rear side tightening portion be continuous on at least either the inside of the thigh or the outside of the thigh, and it is even more desirable that these tightening portions be continuous on both the inside of the thigh and the outside of the thigh. Here, the "inside" refers to either the upper portion or lower portion of the inside of the thigh, the "outside" refers to either the upper portion or lower portion of the outside of the thigh, and the "continuous on both sides" refers to a continuation on the upper portion of the inside of the thigh and lower portion of the outside of the thigh, or on the lower portion of the inside of the thigh and the upper portion of the outside of the thigh (same below). Furthermore, part of the tightening portion is preferably formed at a portion corresponding to a greater trochanter.

[0008] In the garment with a crotch of the present invention, it is desirable that the tightening portion further has a thigh lower part tightening portion which is formed obliquely from an intermediate point on at least either the thigh front side tightening portion or thigh rear side tightening portion to the lower inside of the thigh or lower outside of the thigh. As a result, tension can be applied to at least either the thigh front side tightening portion or thigh rear side tightening portion, so that the supporting effect provided by the thigh front side tightening portion and thigh rear side tightening portion can be improved. In this case, furthermore, it is desirable that one part of the thigh lower part tightening portion is formed in a portion corresponding to the inside of the knee or the outside of the knee, or that the thigh lower part tightening portion connect the thigh front side tightening portion or thigh rear side tightening portion with another tightening portion that is formed in a portion corresponding to the inside of the knee or the outside of the knee. As a result, the kncc supporting effect can be improved. Furthermore, it is desirable that the thigh lower part tightening portion in this case be formed from the vicinity of the center in the longitudinal direction of at least either the thigh front side tightening portion or thigh rear side tightening portion at the thigh. As a result, mutual tension can be applied more easily to the respective tightening portions.

[0009] In the garment with a crotch of the present invention, it is desirable that the tightening portion further has a thigh upper part tightening portion which is formed obliquely from an intermediate point on at least either the thigh front side tightening portion or thigh rear side tightening portion to the upper inside of the thigh or the upper outside of the thigh. As a result, tension can be applied to at least either the thigh front side tightening portion or thigh rear side tightening portion, so that the supporting

effect provided by the thigh front side tightening portion or thigh rear side tightening portion can be improved. Furthermore, it is desirable that the thigh upper part tightening portion in this case be formed from the vicinity of the center in the longitudinal direction of at least either the thigh front side tightening portion or thigh rear side tightening portion at the thigh. As a result, mutual tension can be applied more easily to the respective tightening portions.

[0010] According to the present invention, the garment with a crotch for covering at least part of a lower half of a body is characterized in that a band-like tightening portion at least has, at a front side portion corresponding to a front side of a crus, a crus front side tightening portion formed obliquely from above to below the front side portion and, at a rear side portion corresponding to a rear side of the curs, a crus rear side tightening portion formed obliquely from above to below the rear side portion.

[0011] According to the present invention, as the wearer's crus is clamped by the crus front side tightening portion and crus rear side tightening portion which have a large tightening force, muscles in the front and rear sides of the crus can be supported with a good balance, so that the leg can pivot inwardly and outwardly and rotate inwardly and outwardly easily.

[0012] In the garment with a crotch according the present invention, the crus front side tightening portion and the crus rear side tightening portion preferably respectively incline in the opposite direction with respect to a vertical direction when seen from either the front side or rear side. Furthermore, the crus front side tightening portion and crus rear side tightening portion in the garment with a crotch of the present invention perferably respectively incline in the same direction with respect to the vertical direction when seen from either the front side or the rear side; in this case, it is desirable that the crus front side tightening portion and crus rear side tightening portion are continuous on at least either the inside of the crus or the outside of the crus. Furthermore, it is even more desirable that these tightening portions are continuous on both the inside of the crus and the outside of the crus. As a result, mutual tension can be applied more easily to the respective tightening portions.

[0013] In the garment with a crotch according to the present invention, part of the tightening portion is preferably formed at a portion corresponding to at least either an inside of a knee or an outside of the knee. Then, at least either the inside of the knee or the outside of the knee is supported by part of the tightening portion, so the motion of the knee in the left-to-right direction is suppressed, and the motion of the leg in the back-and-forth direction is stabilized. As a result, the knee joint can bend and stretch easily. Here, the ranges indicated by the "upper side of the knee", "lower side of the knee", "inside of the knee" and "outside of the knee" refer to positions within the knee joint, or positions located within a few centimeters of the outer circumference of the kneecap, and refer to positions that are close enough for direct stabilization of the knee joint by the tightening portion (same below). Accordingly, it is sufficient if at least one part of the tightening portion is formed so as to correspond to such a position.

[0014] In the garment with a crotch according to the present invention, the tightening portion preferably further has a below-knee tightening portion which is formed from a portion corresponding to the inside of the knee and a portion corresponding to the outside of the knee to a portion corresponding to the area below the knee, and the upper edge of the below-knee tightening portion preferably formed in shape that is in dented toward the lower part of the crus. Then, the inside, outside, and the lower side of the wearer's knee are firmly supported by the below-knee tightening portion having a large tightening force. Hence, the knee can be stabilized, and any unwanted motion of the knee can be suppressed. Furthermore, since the tightening portion does not contact the area above the knee or the area below the knee, the freedom of movement of the knee can be ensured.

[0015] It is desirable that the tightening portion in the garment with a crotch of the present invention further has an above-knee tightening portion which is formed from a portion corresponding to the inside of the knee and a portion corresponding to the outside of the knee to a portion corresponding to the upper side of the knee, and that the lower edge of the above-knee tightening portion is formed in a shape that is indented toward the upper part of the thigh. As a result, the stability of the knee is improved.

[0016] It is desirable that the tightening portion in the garment with a crotch of the present invention further has pelvic region tightening portions which are formed in portions corresponding to the left and right side portions of the pelvic region, and an abdomen tightening portion which is formed in a portion corresponding to the abdomen, and that the abdomen tightening portion connect the pelvic region tightening portions that are located on the left and right sides. As a result, the pelvic region tightening portions that contact the left and right side portions of the pelvic region can be pulled toward the center of the body so that the hip joints and pelvis can be stabilized.

[0017] It is desirable that the thigh front side tightening portion in the garment with a crotch of the present invention is formed from the lower part of inside of the thigh to the greater trochanter via the upper part of the front surface of the thigh, and is formed so that this portion is curved in an indented shape toward the upper part of the thigh. As a result, muscular contractions of the front surface of the thigh can be supported.

[0018] In the garment with a crotch of the present invention, it is desirable that the garment has a hem part formed in a portion corresponding to the area above the knee, and that at least either the lower end of the thigh front side tightening portion or the lower end of the thigh rear side tightening portion is located at the hem part. Furthermore, it is desirable that the upper part of the thigh front side tightening portion and the upper part of the

thigh rear side tightening portion are connected in a portion corresponding to the side part of the pelvic region, and that the lower part of the thigh front side tightening portion and the lower part of the thigh rear side tightening portion are connected in a portion corresponding to the lower part of the inside of the thigh. As a result of the formation of such connections, tension is mutually applied to the thigh front side tightening portion and thigh rear side tightening portion, so that the supporting effect of the thigh muscles is increased, and the hip joints can be supported.

Brief Description of the Drawings

[0019] Fig. 1 is a front view showing muscles and bones when the legs of the human body are seen from the front side.

[0020] Fig. 2 is a front view showing muscles and bones when the legs of the human body are seen from the rear side.

[0021] Fig. 3 is a front view of sports spats.

[0022] Fig. 4 is a rear view of the sports spats.

[0023] Fig. 5 is a front view of sports spats.

[0024] Fig. 6 is a rear view of the sports spats.

[0025] Fig. 7 is a rear view of the sports spats.

[0026] Fig. 8 is a front view of sports spats.

[0027] Fig. 9A is a front view of sports spats, and Fig. 9B is a rear view of the sports spats.

[0028] Fig. 10A is a front view of sports spats, and Fig. 10B is a rear view of the sports spats.

[0029] Fig. 11A is a front view of sports spats, and Fig. 11B is a rear view of the sports spats.

[0030] Fig. 12A is a front view of sports spats, and Fig. 12B is a rear view of the sports spats.

[0031] Fig. 13 is a diagram of sports spats as seen from the front surface.

[0032] Fig. 14 is a diagram of sports spats as seen from the front surface.

[0033] Fig. 15 is a diagram of sports spats as seen from the front surface.

[0034] Fig. 16 is a diagram of sports spats as seen from the front surface.

[0035] Fig. 17A is a diagram of above-knee length sports spats as seen from the front surface, and Fig. 17B is a diagram of these above-knee length sports spats as seen from the back surface.

[0036] Fig. 18A is a diagram of above-knee length sports spats as seen from the front surface, and Fig. 18B is a diagram of these above-knee length sports spats as seen from the back surface.

[0037] Fig. 19A is a diagram of above-knee length sports spats as seen from the front surface, and Fig. 19B is a diagram of these above-knee length sports spats as seen from the back surface.

[0038] Fig. 20A is a diagram of above-knee length sports spats as seen from the front surface, and Fig. 20B is a diagram of these above-knee length sports spats as seen from the back surface.

[0039] Fig. 21 A is a diagram of above-knee length sports spats as seen from the front surface, and Fig. 21B is a diagram of these above-knee length sports spats as seen from the back surface.

Best Modes for Carrying Out the Invention

[0040] The embodiment of the present invention will be described with reference to the drawings. The same elements are denoted by the same reference numerals, and a repetitive description thereof will be omitted.

[0041] Prior to a description of the embodiment, the skeletal and muscular system used when describing the function of the present invention will be described with reference to Figs. 1 and 2. Fig. 1 is a view showing the muscles and bones when the legs of the human body are seen from the front side, and Fig. 2 is a view showing the muscles and bones when the legs of the human body are seen from the rear side. As shown in Fig. 1, a long adductor 102, pectineus 103, and sartorius 104 are arranged in the front side of the thigh, and a long peroneal 108, tribialis anterior 109, long extensor 110 of toes, gastrocnemius 111, and soleus 112 are arranged in the front side of the crus. As shown in Fig. 2, a great adductor 101, semimembranous 105, biceps 106 of the thigh, and semitendinous 107 are arranged in the rear side of the thigh, and the gastrocnemius 111 and soleus 112 are arranged in the rear side of the crus. Figs. 1 and 2 show a greater trochanter 113. Note that Figs. 1 and 2 show typical muscles and bones, and the muscles and bones to be supported in the present invention are not limited to them.

[0042] Sports spats 1 (sports garment with a crotch) of this embodiment will be described with reference to Figs. 3 and 4. Fig. 3 is a front view of sports spats 1, and Fig. 4 is a rear view of the sports spats 1.

[0043] As shown in Figs. 3 and 4, the sports spats 1 cover a range of the hips to the crus, and have band-like tightening portions 2. The main body and a tightening portion 2 of the sports spats 1 are formed of a stretchable material. As the stretchable material, for example, power net, satin net, triconet, two-way tricot, and two-way russel can be raised. In regard to the materials used in the main body and tightening portion 2, the following concrete examples may be cited: for example, two-way tricot (56-dtex polyester yam with a mixing ratio of 82%, and 55-dtex polyurethane yam with a mixing ratio of 18%) is used in the main body cloth, and power net (55-dtex nylon yarn with a mixing ratio of 82%, and 310-dtex polyurethane yarn with a mixing ratio of 18%) is used in the tightening portions. In this manner, the tightening portion 2 is formed of a stretchable material in the same manner as the main body portion of the sports spats 1, but the tightening force of the fabric is stronger in the tightening portion 2. This is the characteristic feature of the present invention. Furthermore, it is desirable that the material of the main body cloth have an elongation in two directions.

[0044] The width of the tightening portion differs depending on the portion where it is to be formed and on the size of the garment, and accordingly it is difficult to numerically define it simply, but generally a tightening portion is preferably formed with a width of 2 cm on average or more, and more preferably 3 cm on average or more. A tightening portion corresponding to a portion to be supported with a particular focus is preferably formed with a width of 5 cm or more This will be described in detail. For example, the width of a tightening portion in contact with a calf is preferably about 2 cm to 6 cm, and that of a tightening portion in contact with the inner knee or outer knee is preferably 3 cm or more (more preferably about 5 cm to 10 cm). The width of a tightening portion in contact with a thigh is preferably about 3 cm to 8 cm, and that of a tightening portion in contact with a greater trochanter and hips is preferably 4 cm or more (in some cases, about 8 cm to 15 cm). Furthermore, a wide portion with a width of approximately 20 cm may also be partially formed. Moreover, these numerical values are examples using the M size of a Japanese male as a reference (same below). The aforementioned material regarding the width of the tightening portion also applies to the other embodiments described below.

[0045] The tightening portion 2 may be formed of one continuous cloth, or a plurality of cloths. To form the tightening portion 2, it is preferable to overlay a cloth with a strong tightening force on the outer side of a main body cloth that can stretch in two directions. Alternatively, a cloth with a strong tightening force may be overlaid on the inner side of the main body cloth. The method for forming the tightening portions 2 is similar to what is described below with regard to the other embodiments.

[0046] For example, if such a tightening portion is formed so as to connect the greater trochanter and the inside surface of the knee, the upper part of the inside of the thigh and the outside surface of the knee or the side surface of the knee and the side surface of the ankle on the opposite side by a shorter distance, tension can be more easily applied to the muscles that contact this tightening portion 2. Furthermore, for example, if the tightening portion has a shape that is linear or close to linear, connection by a shorter distance is possible. However, it is not always necessary that this portion be formed with a linear shape; for example, this portion may also be formed as a curved line in which the straight line that is the shortest line is caused to protrude upward, with both points used as supporting points, or may be formed as a curved line that protrudes downward. Also, the connecting of the tightening portion 2 with the shortest distance possible described above applies to the other embodiments described below as well.

[0047] As shown in Fig. 3, the tightening portion 2 has a thigh front side tightening portion 2b at its portion 1a corresponding to the front side of the thigh, and crus front side tightening portions 2e and 2f at its portion 1b corresponding to the front side of the crus. As shown in Fig. 4, the tightening portion 2 has thigh rear side tightening portions 2c and 2d at its portion 1c corresponding to the rear side of the thigh. The features of the respective tightening portions will be described.

[0048] The thigh front side tightening portion 2b shown in Fig. 3 is, at the portion 1a corresponding to the front side of the thigh, formed obliquely from above the outer side to below the inner side of the portion 1a. This will be described in more detail. The upper portion of the thigh front side tightening portion 2b is located at that position of the spats 1 which corresponds to the greater trochanter 113, and the lower portion of the thigh front side tightening portion 2b is located at that position of the spats 1 which corresponds to the inner side of the knee joint. The thigh front side tightening portion 2b is formed in a substantially linear shape across a portion corresponding to the upper greater trochanter and a portion corresponding to the inside of the lower knee joint, and contacts the front surface of the thigh. As a result of such contact, the muscles of the front surface of the thigh are bunched between the upper part and the lower part. Furthermore, as long as the thigh front side tightening portion 2b is caused to contact the portion extending from the lower inside to the upper outside of the thigh, preferably the portion extending from the inner knee to the greater trochanter, on the front surface of the thigh, the shape may be a linear shape or a shape that is slightly curve upward or downward. That portion of the thigh front side tightening portion 2b which is above the greater trochanter 113 is formed to extend upward from the greater trochanter 113 along the side portion of the hip

[0049] The crus front side tightening portion 2e shown in Fig. 3 is, at the portion 1b corresponding to the front side of the crus, formed obliquely from above the inner side to below the outer side of the portion 1b. To describe this in concrete terms, the upper part of the crus front side tightening portion 2e is positioned in a portion corresponding to the inside of the knee joint, and the lower part of the crus front side tightening portion 2e is positioned in a hem portion corresponding to the outside of the ankle. The crus front side tightening portion 2e is formed to be able to support the long peroneal 108 between its upper and lower portions. With this crus front side tightening portion 2e, the motion of the long peroneal 108 is supported. The upper portion of the crus front side tightening portion 2e need not be located at the portion corresponding to the inner side of the knee joint, but suffices as far as it reaches a more inner side (crotch side) and upper side than a portion near the center of the front side surface of the crus. Furthermore, the lower part of the band-form portion formed between the upper part and lower part of the crus front side tightening portion 2e need not always be formed only on the front side of the crus; as long as the major portion of the tightening portion is on the front side of the crus, a portion of this band-form portion may be continuously formed as far as the portion 1d corresponding to the rear side of the crus (see Fig. 4).

[0050] The crus front side tightening portion 2f shown in Fig. 3 is, at the portion 1b corresponding to the front

side of the crus, formed obliquely from above the outer side to below the inner side of the portion 1b. To describe this in concrete terms, the upper part of the crus front side tightening portion 2f is positioned in a portion corresponding to the outside of the knee joint, and the lower part of the crus front side tightening portion 2f is positioned in a hem portion corresponding to the inside of the ankle. The crus front side tightening portion 2f is formed to be able to support the tribialis anterior 109, an extensor hallucis longus (not shown), long extensor 110 of toes, and long peroneal 108 between its upper and lower portions. With the crus front side tightening portion 2f, the motion of the tribialis anterior 109, extensor hallucis longus, long extensor 110 of toes, and long peroneal 108 is supported. The lower portion of a band-like portion formed between the upper and lower portions of the crus front side tightening portion 2f need not be formed only on the front side of the crus, but may be partly formed at the portion 1d corresponding to the rear side of the crus (see Fig. 4).

[0051] As shown in Fig. 3, the crus front side tightening portion 2e and crus front side tightening portion 2f intersect below the knee, and their upper edges form a V shape. Furthermore, as is shown in Fig. 3, in the portion corresponding to the periphery of the knee, a thigh front side tightening portion 2b and crus front side tightening portion 2e are formed in the inside portion of the knee, and a crus front side tightening portion 2f and thigh rear side tightening portion 2d (see Fig. 4) are formed in the outside portion of the knee. However, no tightening portion is formed in the upper portion of the knee. Thus, as a result of the knee being supported from three directions, i. e., from the left and right side surfaces and from below, the knee ligaments are effectively supported, so that the bending and stretching motion of the knee joint is facilitated. Also, when no tightening portion is formed at the portion above the knee, the knee can follow the motion reliably.

[0052] The width of each tightening portion formed at the portion corresponding to the periphery of the knee is preferably 3 cm to 10 cm. The tightening portions may be formed with a constant width within this range, or different widths. Furthermore, in cases where [the respective tightening portions] are formed with different widths, it is desirable that the width of the portions contacting the inner knee in which the ligaments are weak be made wider than the width of other portions, especially the width of the outside knee and area below the knee. Also, the widths of the tightening portions at the areas corresponding to the knees as described above apply to the other embodiments described below as well.

[0053] Furthermore, in addition to the tightening portions shown in the Fig. 3, the two tightening portions described next may also be formed. The first tightening portion is a tightening portion which is formed from the inner knee portion of the crus front side tightening portion 2e shown in Fig. 3 via the inside surface of the calf to the upper part of the calf inside surface contact location of the crus front side tightening portion 2f. The second tightening portion is a tightening portion which is formed from the outer knee portion of the crus front side tightening portion 2f shown in Fig. 3 via the outside surface of the calf to the upper part of the calf outside surface contact location of the crus front side tightening portion 2e. Both of these two tightening portions may be formed, or only one or the other of these two tightening portions may be formed. As a result of the formation of such tightening portions, it becomes easier to apply tension to the inside, outside and lower side of the knee, so that the effect supporting the knee is heightened. Furthermore, as a result of these tightening portions contacting the calf, the calf can be supported. Moreover, tension can be applied most easily in a case where these two tightening portions are formed in a rectilinear shape, so that such a shape is ideal; however, these tightening portions may also show some curvature. Furthermore, since it is sufficient if tension can be applied between these two tightening portions and other tightening portions connected to these respective tightening portions, these two tightening portions may be formed with a narrower width than the other tightening portions.

[0054] The thigh rear side tightening portion 2c shown in Fig. 4 is, at the portion 1c corresponding to the rear side of the thigh, formed obliquely from above the outer side to below the inner side of the portion 1c. This will be described in more detail. The upper portion of the thigh rear side tightening portion 2c is located at a portion corresponding to the greater trochanter 113, and the lower portion of the thigh rear side tightening portion 2c is located at a portion corresponding to the inner side of the knee joint. The thigh rear side tightening portion 2c is formed to be able to support the semimembranous 105 between its upper and lower portions. Furthermore, the upper part of the thigh rear side tightening portion 2c need not always be positioned in a portion corresponding to the greater trochanter 113; it is sufficient if this tightening portion at least extends beyond the vicinity of the center of the upper part of the thigh on the rear side surface. Furthermore, the portion of the thigh rear side tightening portion 2c that is located above the greater trochanter 113 contacts the side part of the pelvic region from the greater trochanter 113, and is formed toward the upper part of the rear center; moreover, this portion contacts the upper part of the swell of the hip (upper part of the pelvic region), and the end portions of the thigh rear side tightening portion 2c on the left and right are formed so that these end portions are connected in the vicinity of the rear center of the waistline (upper part of the pelvic region). Furthermore, the thigh rear side tightening portion 2c may also connect with the thigh front side tightening portion 2b shown in Fig. 3 at the side part of the pelvic region. As a result of such a connection of the thigh rear side tightening portion 2c and thigh front side tightening portion 2b at the side part of the pelvic region, tension is mutually applied, so that the supporting effect of the thigh muscles is increased; furthermore, the

hip joint can be supported. Moreover, as a result of the thigh rear side tightening portion 2c or thigh front side tightening portion 2b contacting the side part of the pelvic region including the greater trochanter 113, the hip joint can be supported. Furthermore, as a result of the left and right thigh rear side tightening portions 2c being connected at the rear center of the pelvic region, or the left and right thigh front side tightening portions 2b being connected at the front center of the abdomen, the effect of supporting the hip joints is further increased. In cases where the left and right thigh rear side tightening portions 2c are connected at the rear center of the pelvic region, it is desirable that the connection location be disposed on the upper part of the pelvic region.

[0055] The thigh rear side tightening portion 2d shown in Fig. 4 is, at the portion 1c corresponding to the rear side of the thigh, formed obliquely from above the inner side to below the outer side of the portion 1c. This will be described in more detail. The upper portion of the thigh rear side tightening portion 2d is located at a portion corresponding to a portion near the hip bone connecting point (portion below the natal cleft), and the lower portion of the thigh rear side tightening portion 2d is located at a portion corresponding to the outer side of the knee joint. The thigh rear side tightening portion 2d is formed to be able to support the biceps 106 of thigh, semitendinous 107, and semimembranous 105 between its upper and lower portions. With the thigh rear side tightening portion 2d, the motion of the biceps 106 of thigh, semitendinous 107, and semimembranous 105 is supported. Furthermore, the upper ends of the thigh rear side tightening portions 2d on the left and right thighs are connected in the vicinity of the joining point of the hip bones. As a result, tension is mutually applied to the thigh rear side tightening portions 2d on the left and right. Furthermore, the upper parts of the thigh rear side tightening portions 2d may be positioned at the inside upper parts (below the crotch) on the rear sides of the thighs. Moreover, the upper parts of the thigh rear side tightening portions 2d may contact the natal cleft and extend to the waistline, or may contact the natal cleft and connect with other tightening portions at the rear center of the upper part of the pelvic region. As a result, more tension is applied to the thigh rear side tightening portions 2d, so that the effect of supporting the muscles is improved

[0056] Since the thigh rear side tightening portion 2c and thigh rear side tightening portion 2d are not formed above the natal cleft, as shown in Fig. 4, stretch of the hips is secured. Accordingly, for example, even when the wearer bends his body forward, the garment can follow this motion easily.

[0057] As is shown in Figs. 3 and 4, the thigh front side tightening portion 2b and thigh rear side tightening portion 2c are connected in their respective upper parts at a portion including the greater trochanter from the upper outside of the thigh, and are connected in their respective lower parts at the inside of the knee from the lower inside of the thigh. In this case, the tightening portions that contact the front and back of the thigh are connected respectively at the side part of the hip joint above the outside of the thigh and the inner knee below the inside of the thigh. Specifically, the tightening portions that contact the front and back of the thigh are connected on both the inside and outside of the thigh. As a result, a tightening force can be applied to both the knee joint and the hip joint, so that both the knee joint and hip joint can be stabilized and supported. On the inner side of the knee, the upper portion of the crus front side tightening portion 2e is connected to the thigh front side tightening portion 2b and thigh rear side tightening portion 2c described above. The lower portion of the thigh rear side tightening portion 2d and the upper portion of the crus front side tightening portion 2e are connected to each other on the outer side of the knee. Not both the thigh rear side tightening portion 2d and thigh rear side tightening portion 2c need be formed, but only either tightening portion may be formed. Either one of the thigh rear side tightening portion 2d and thigh rear side tightening portion 2c may only form a portion below the intersecting portion of the two tightening portions. It would also be possible to have only the thigh front side tightening portion 2b and the thigh rear side tightening portion 2c formed. In this case, the inner knee and the side of the hip can be stabilized by connecting the inner knee and the greater trochanter with the thigh front side tightening portion 2b and the thigh rear side tightening portion 2c. Or, only the thigh front side tightening portion 2b and the thigh rear side tightening portion 2d can be formed. In this case, the knee can be stabilized by further forming an below knee tightening portion, as described later, thereby providing opposing tension at the front and rear of the thigh with the below knee tightening portion and the portions abutting the outer knee and the inner knee. Also, the thigh front side tightening portion 2b can be formed so that it does not abut the area directly above the knee, thereby providing a greater degree of freedom for the knee.

[0058] In this manner, when the thigh is supported from front and behind with the thigh front side tightening portion and thigh rear side tightening portion, the hip joint and knee joint can pivot inwardly and outwardly and rotate inwardly and outwardly easily. As the knee is supported from the left, right, and lower directions by part of the tightening portion, the knee is stabilized, so the knee joint can bend and stretch easily. Hence, sports spats suitable for supporting the operation of the muscles during an exercise that uses legs can be provided.

[0059] Furthermore, the thigh front side tightening portions, thigh rear side tightening portions and crus front side tightening portions are connected to each other (continuous with each other) at either the waste, thighs, knees or crus, and the left and right thigh rear side tightening portions are connected above and below the rear center of the pelvic region. As a result, the respective tightening portions have a structure that applies tension with the rear center of the pelvic region (location of contact of the spine and pelvis) as a supporting point, so that

tension is applied to the lower half of the body with the core of the body as a center. Accordingly, the muscles and joints of the pelvic region, thighs, knees and crus can be supported with good balance.

[0060] Furthermore, in the sports spats 1 shown in Figs. 3 and 4, one tightening portion 2b is disposed on the front side of the thigh, and two tightening portions 2c and 2d are disposed on the rear side of the thigh. By thus disposing a larger number of tightening portions on the rear side of the thigh than on the front side of the thigh, it is possible to improve the supporting effect when the thigh is caused to operate in the forward-rearward direction. This type of advantage is also provided in the other embodiments described below.

[0061] Modifications of the tightening portion 2 of the sports spats according to this embodiment will be described with reference to Figs. 5 to 8.

[0062] Fig. 5 is a front view of sports spats 1 and shows a thigh front side tightening portion 2a formed at a portion 1a corresponding to the front side of the thigh. The thigh front side tightening portion 2a shown in Fig. 5 is, at the portion 1a corresponding to the front side of the thigh, formed obliquely from above the inner side to below the outer side of the portion 1a. To describe this in concrete terms, the upper part of the thigh front side tightening portion 2a is positioned in a portion corresponding to the inside of the thigh below the crotch (upper inside of the thigh), and the lower part of the thigh front side tightening portion 2a is positioned in a portion corresponding to the outside of the knee joint. Here, the muscles of the thigh are bunched obliquely from the upper part to the lower part, so that the contractile motion in the muscles in this interval is supported. Accordingly, as a result of the thigh front side tightening portion 2a being formed obliquely from the upper part to the lower part of the thigh, and [thus] being formed so that the pectineus 103, short adductor (not shown in the figures), long adductor 102 and great adductor 101 can be supported, the motions of the pectineus 103, short adductor, long adductor 102 and great adductor 101 are supported. Furthermore, the lower part of the thigh front side tightening portion 2a need not always be positioned in a portion corresponding to the outside of the knee joint; it is sufficient if this tightening portion 2a reaches at least a point that is further to the outside (flank side) than the vertical center line on the front side of the thigh, i. e., reaches the lower part of the outside of thigh.

[0063] Fig. 6 is a rear view of sports spats 1 and shows a crus rear side tightening portion 2g formed at a portion 1d corresponding to the rear side of the crus. The crus rear side tightening portion 2g shown in Fig. 6 is, at the portion 1d corresponding to the rear side of the crus, formed obliquely from above the outer side to below the inner side of the portion 1d. To describe this in concrete terms, the upper part of the crus rear side tightening portion 2g is positioned in a portion corresponding to the outside of the knee joint or the area below the outside of the knee joint, and the lower part of the crus rear side tightening portion 2g is positioned in a hem portion corresponding to the inside of the ankle. The crus rear side tightening portion 2g is formed to be able to support the gastrocnemius 111, rear peroneal (not shown), and soleus 112 between its upper and lower portions. With the crus rear side tightening portion 2g, the motion of the gastrocnemius 111, rear peroneal, and soleus 112 is supported. Furthermore, the band-form portion formed between the upper part and lower part of the crus rear side tightening portion 2g need not always be formed on only the rear side of the crus; a portion of this band-form portion may also be formed in a portion corresponding to the front side of the crus.

[0064] Fig. 7 is a rear view of sports spats 1 and shows a crus rear side tightening portion 2h formed at a portion 1d corresponding to the rear side of the crus. The crus rear side tightening portion 2h shown in Fig. 7 is, at the portion 1d corresponding to the rear side of the crus, formed obliquely from above the inner side to below the outer side of the portion 1d. To describe this in concrete terms, the upper part of the crus rear side tightening portion 2h is positioned in a portion corresponding to the inside of the knee joint or the area below the inside of the knee joint, and the lower part of the crus rear side tightening portion 2h is positioned in a hem portion corresponding to the outside of the ankle. The crus rear side tightening portion 2h is formed to be able to support the gastrocnemius 111 and soleus 112 between its upper and lower portions. With the crus rear side tightening portion 2h, the motion of the gastrocnemius 111 and soleus 112 is supported. Furthermore, the band-form portion formed between the upper part and lower part of the crus rear side tightening portion 2h need not always be formed on only the rear side of the crus; a portion of this band-form portion may also be formed in a portion corresponding to the front side of the crus.

[0065] Fig.8 is a front view of sports spats 1 and shows a below-knee tightening portion 2v formed at a portion 1b corresponding to the front side of the crus. The below-knee tightening portion 2v (portion indicated by a solid line) shown in Fig. 8 is formed to extend from a portion corresponding to the inner side of the knee joint and the outer side of the knee joint to a portion on the lower side of the knee joint, and the upper edge of the below-knee tightening portion 2v forms a V shape. Accordingly, the wearer's knee is firmly supported from the inner, outer, and lower sides of the knee, so any unwanted motion of the knee is suppressed, and the knee can stretch easily. As the below-knee tightening portion 2v is formed, the bending motion of the knee is suppressed, so the patellar ligament below the knee can be protected. The upper edge of the below-knee tightening portion 2v need not form a V shape, but may form, e.g., a U shape or crescent shape. In other words, the shape of the upper edge of the below-knee tightening portion 2v suffices as far as it forms a recess toward the lower portion of the crus. The below-knee tightening portion 2v may be formed by intersecting two tightening portions below the knee. As

shown in Fig. 8, the portion corresponding to the upper side of the knee is formed of a soft tightening portion H having a softer tightening force than that of the tightening portion 2, so that a decrease in the performance of the knee to follow the motion can be suppressed. The main body portion (excluding the tightening portion 2) and soft tightening portion H of the sports spats suffice as far as they are formed of cloths having softer tightening forces than that of the tightening portion 2, or the main body portion (excluding the tightening portion 2) and soft tightening portion H may be formed of one cloth integrally.

[0066] With the tightening portion 2 of this embodiment, even when the respective portions described above are combined as will be described later, the same effect as that of the tightening portion in which the respective portions are combined as shown in Figs. 3 and 4 can be obtained.

[0067] Regarding the combination of the portion corresponding to the thigh, the thigh front side tightening portion 2a and thigh rear side tightening portion 2d may be combined. This combination supports the inner rotating motion of the knee and the outer knee. In particular, this combination has the effect of supporting the knee not to turn to the outer side when the wearer lands on his feet. The thigh front side tightening portion 2b and thigh rear side tightening portion 2c may be combined. This combination supports the greater trochanter and the inner knee. When the greater trochanter is supported, the hip joint is supported, so the hip joint can bend and stretch easily. When the thigh front side tightening portion and thigh rear side tightening portion combined in this manner are seen from either the front or rear side of the spats 1, the respective tightening portions incline in the same direction with respect to the vertical direction. Furthermore, it is desirable that the vertical width of the connecting portions of the tightening portions that are thus combined on the outside of the thigh and inside of the thigh be 5 cm or greater. Even more preferably, the vertical width of the connecting portions on the outside of the thigh is set at approximately 5 to 15 cm, and the vertical width of the connecting portions on the inside of the thigh is set at approximately 5 to 10 cm. The description concerning these widths also applies to other embodiments. When a tightening portion for supporting the middle gluteus (muscle in the upper portion of the hips) is added to this combination of tightening portion, the outer pivoting motion of the hip joint can be supported.

[0068] The thigh front side tightening portion 2a and thigh rear side tightening portion 2c may be combined. This combination supports the inner rotating motion of the knee and the inner rotating motion of the hip joint. The thigh front side tightening portion 2b and thigh rear side tightening portion 2d may be combined. This combination supports the outer rotating and outer pivoting motion of the knee. When the thigh front side tightening portion and thigh rear side tightening portion combined in this manner are seen from either the front or rear side of the spats 1, the respective tightening portions incline in opposite directions with respect to the vertical direction.

[0069] In this manner, when the thigh is supported from front and behind with the thigh front side tightening portion and thigh rear side tightening portion, the hip joint and knee joint can pivot inwardly and outwardly and rotate inwardly and outwardly easily. As the knee is supported from the left and right by part of the thigh front side tightening portion and part of the thigh rear side tightening portion, the knee joint can bend and stretch easily.

[0070] Regarding the combination of the portion corresponding to the crus, the crus front side tightening portion 2e and crus rear side tightening portion 2h may be combined. This combination supports the inner rotating motion of the knee and the inner knee. The crus front side tightening portion 2f and crus rear side tightening portion 2g may be combined. This combination supports the outer rotating motion of the knee and the outer knee. When the crus front side tightening portion and crus rear side tightening portion combined in this manner are seen from either the front or rear side of the spats 1, the respective tightening portions incline in the same direction with respect to the vertical direction.

[0071] The crus front side tightening portion 2e and crus rear side tightening portion 2g may be combined. This combination supports the outer pivoting motion of the knee and the outer pivot of the crus. Hence, for example, an inside kick motion and the like in soccer are supported. The crus front side tightening portion 2f and crus rear side tightening portion 2h may be combined. This combination supports the outer pivoting motion of the knee. When the crus front side tightening portion and crus rear side tightening portion combined in this manner are seen from either the front or rear side of the spats 1, the respective tightening portions incline in opposite directions with respect to the vertical direction.

[0072] In this manner, when the crus is supported from front and behind with the crus front side tightening portion and crus rear side tightening portion, the knee joint and ankle can pivot inwardly and outwardly and rotate inwardly and outwardly easily. As the knee is supported from the left and right by part of the crus front side tightening portion and part of the crus rear side tightening portion, the knee joint can bend and stretch easily.

[0073] The respective combinations of the portion corresponding to the thigh described above and the respective combinations of the portion corresponding to the crus described above may be combined. Practical examples of such case will be described with reference to Figs. 9A to 10B. Fig. 9A is a front view of sports spats and shows a state wherein a thigh front side tightening portion 2a and crus front side tightening portion 2f are combined on the front side of the leg. Fig. 9B is a rear view of the sports spats and shows a state wherein a thigh rear side tightening portion 2d and crus rear side tightening portion 2g are combined on the rear side of the leg. In the spats shown in Figs. 9A and 9B, on the thigh, the thigh front side tightening portion 2a and thigh rear side tightening

portion 2d are formed to incline in the same direction, and on the crus, the crus front side tightening portion 2f and crus rear side tightening portion 2g are formed to incline in the same direction. When the respective tightening portions are formed in this manner, the wearer's thigh and crus are firmly supported from front and behind. Furthermore, the respective tightening portions are connected in a portion corresponding to the outside of the knee. Accordingly, since the tightening portion contacting the outside of the knee is pulled in four directions by the respective tightening portions, the outside of the wearer's knee is firmly supported. In this case, furthermore, another tightening portion which contacts the inside of the knee so that the inside of the knee can be supported may also be formed. As a result, the wearer's knee is firmly supported from the inside and the outside. Furthermore, by connecting both the crus front side tightening portion 2f and crus rear side tightening portion 2g at the lower part of the inside of the crus, it is possible to apply more tension to the respective tightening portions. Also, it would be preferable for the bottom end of the crus rear side tightening portion 2g and the crus front side tightening portion 2f to extend to the edge of the spats.

[0074] Fig. 10A is a front view of sports spats and shows a state wherein a thigh front side tightening portion 2b and crus front side tightening portion 2e are combined on the front side of the leg. Fig. 10B is a rear view of the sports spats and shows a state wherein a thigh rear side tightening portion 2c and crus rear side tightening portion 2h are combined on the rear side of the leg. In the spats shown in Figs. 10A and 10B, on the thigh, the thigh front side tightening portion 2b and thigh rear side tightening portion 2c are formed to incline in the same direction, and on the crus, the crus front side tightening portion 2e and crus rear side tightening portion 2h are formed to incline in the same direction. Furthermore, the upper part of the thigh front side tightening portion 2b and the upper part of the thigh rear side tightening portion 2c contact the greater trochanter, and are connected to each other. When the respective tightening portions are formed in this manner, the wearer's thigh and crus are firmly supported from front and behind. As the tightening portion in contact with the inner side of the knee is pulled by the respective tightening portions in four directions, the inner side of the wearer's knee is supported firmly. In this case, another tightening portion may also be formed so that the outer side of the knee can be supported. Then, the wearer's knee is firmly supported from the inner and outer sides. Also, by connecting the tightening portions at the below the outer lower thigh, the crus front side tightening portion 2e and the crus rear side tightening portion 2h can apply more tension to the tightening portions. Also, it would be preferable for the bottom end of the crus rear side tightening portion 2h and the crus front side tightening portion 2e to extend to the edge of the spats.

[0075] The respective combinations of the portion corresponding to the thigh described above and the below-knee tightening portion 2v described above may be combined. Practical examples of such case will be described with reference to Figs. 11A to 12B. Fig. 11A is a front view of sports spats and shows a state wherein a thigh front side tightening portion 2a and below-knee tightening portion 2v are combined on the front side of the leg. Fig. 11B is a rear view of the sports spats and shows a state wherein a thigh rear side tightening portion 2d is formed on the rear side of the leg. In the spats shown in Figs. 11A and 11B, on the thigh, the thigh front side tightening portion 2a and thigh rear side tightening portion 2d are formed to incline in the same direction. The lower portion of the thigh front side tightening portion 2a, the lower portion of the thigh rear side tightening portion 2d, and the upper portion on the outer knee side of the below-knee tightening portion 2v are connected to each other at the outer knee portion. When the respective tightening portions are formed in this manner, the wearer's thigh is firmly supported from front and behind. As the below-knee tightening portion 2v is in contact with the inner, outer, and lower sides of the knee and is pulled obliquely upward by the tightening portions formed on the front and rear sides of the thigh, the wearer's knee is firmly supported in three directions. In cases where the tightening portion thus does not contact the area above the knee, the degree of freedom of the knee is ensured, so that movement tracking is improved. On the other hand, in cases where the tightening portion contacts the area above the knee, the stability of the knee is improved, but movement tracking deteriorates. Alternatively, a thigh rear side tightening portion 2c may be further formed on the spats shown in Figs. 11A and 11B. In this case, the lower portion of the thigh rear side tightening portion 2c and the inner-knee-side upper portion of the below-knee tightening portion 2v are connected to each other at the inner knee portion. Then, that portion of the below-knee tightening portion 2v which is in contact with the inner knee is pulled upward toward the outer side of the thigh by the thigh rear side tightening portion 2c, and that portion of the below-knee tightening portion 2v which is in contact with the outer knee is pulled upward toward the inner side of the thigh by the thigh front side tightening portion 2a and thigh rear side tightening portion 2d. Specifically, the inner knee side contacting part and outer knee side contacting part of the below-knee tightening portion 2v are pulled in respectively opposite directions on the front and back of the thigh, so that the force supporting the knee is increased. Another tightening portion may be further formed to connect to the inner-knee-side upper portion of the below-knee tightening portion 2v, and the upper portion of the tightening portion may be connected to the thigh front side tightening portion 2a or thigh rear side tightening portion 2d. Furthermore, the thigh front side tightening portion 2b, thigh rear side tightening portion 2c and below-knee tightening portion 2v may be combined. In this case, the lower portion of the thigh front side tightening portion 2b, the lower portion of the thigh rear side tightening portion 2c, and the inner-knee-side upper portion of the below-knee tightening

portion 2v are connected to each other at the inner knee portion. Furthermore, if a tightening portion that connects the lower part of the below-knee tightening portion 2v and the hem of the sports spats is further installed, more tension is applied to the tightening portions located below the knee and on the inside and outside of the knee, so that the supporting effect is improved. Moreover, the tightening portion that connects the lower part of the below-knee tightening portion 2v and the hem of the sports spats may be a single tightening portion; however, tension can be applied more easily by forming two tightening portions so that the below-knee tightening portion 2v is pulled downward to the left and right. It would also be possible to have only the thigh front side tightening portion 2a and the thigh rear side tightening portion 2d formed without forming the below-knee tightening portion 2v.

[0076] Fig. 12A is a front view of sports spats and shows a state wherein a thigh front side tightening portion 2a and below-knee tightening portion 2v are combined on the front side of the leg. Fig. 12B is a rear view of the sports spats and shows a state wherein a thigh rear side tightening portion 2c is formed on the rear side of the leg. In the spats shown in Figs. 12A and 12B, on the thigh, the thigh front side tightening portion 2a and thigh rear side tightening portion 2c are formed to incline in opposite directions. The lower portion of the thigh front side tightening portion 2a and the outer-knee-side upper portion of the below-knee tightening portion 2v are connected to each other at the outer knee portion. The upper portion of the thigh rear side tightening portion 2c is in contact with the greater trochanter. When the respective tightening portions are formed in this manner, the wearer's thigh is firmly supported from front and behind. As the below-knee tightening portion 2v is in contact with the inner, outer, and lower sides of the knee and is pulled obliquely upward by the tightening portions formed on the front and rear sides of the thigh, the wearer's knee is firmly supported in three directions. In cases where the tightening portion thus does not contact the area above the knee, the degree of freedom of the knee is ensured, so that movement tracking is improved. On the other hand, in cases where the tightening portion contacts the area above the knee, the stability of the knee is improved, but movement tracking deteriorates. A thigh rear side tightening portion 2c may be further formed on the spats shown in Figs. 12A and 12B. In this case, the lower portion of the thigh rear side tightening portion 2c and the inner-knee-side upper portion of the below-knee tightening portion 2v are connected to each other at the inner knee portion. Another tightening portion may be further formed to connect to the inner-knee-side upper portion of the below-knee tightening portion 2v, and the upper portion of the tightening portion may be connected to the thigh front side tightening portion 2a or thigh rear side tightening portion 2c. Alternatively, The thigh front side tightening portion 2b, thigh front side tightening portion 2d and blow-knee tightening portion 2v may be combined together. In this case, the lower portion of the thigh front side tightening portion 2b and the inner-knee-side upper portion of the below-knee tightening portion 2v are connected to each other at the inner knee portion, and the lower portion of the thigh rear side tightening portion 2d and the outer-knee-side upper portion of the below-knee tightening portion 2v are connected to each other at the outer knee portion. Furthermore, if a tightening portion that connects the lower part of the below-knee tightening portion 2v and the hem of the sports spats is further installed, more tension is applied to the tightening portions located below the knee and on the inside and outside of the knee, so that the supporting effect is improved. Moreover, the tightening portion that connects the lower part of the below-knee tightening portion 2v and the hem of the sports spats may be a single tightening portion; however, tension can be applied more easily by forming two tightening portions so that the below-knee tightening portion 2v is pulled downward to the left and right. It would also be possible to have only the thigh front side tightening portion 2a and thigh rear side tightening portion 2c formed without forming the below-knee tightening portion 2v.

[0077] Next, an example of the deformation of the tightening portions on the front side of the thigh will be described with reference to the front views of sports spats shown in Figs. 13 through 16. Fig. 13 shows a state in which the thigh front side tightening portion 2b and a thigh front side tightening portion 2au (thigh upper part tightening portion) are combined on the front side of the thigh. As was described above, the thigh front side tightening portion 2b is formed obliquely from the upper part to the lower part of the front surface of the thigh. The thigh front side tightening portion 2au is formed from the upper part of the inside of the thigh to a connecting portion of the two tightening portions 2b and 2au which is located at an intermediate point on the thigh front side tightening portion 2b. As a result of the installation of such a thigh front side tightening portion 2au, tension can be applied to the thigh front side tightening portion 2b that is formed obliquely from the upper part to the lower part of the front side of the thigh, so that the supporting effect provided by the thigh front side tightening portion 2b can be improved. Furthermore, the width of the thigh front side tightening portion 2au can be made narrower than the width of the thigh front side tightening portion 2b. In concrete terms, this may be a width of approximately 2 to 4 cm.

[0078] Fig. 14 shows a state in which the thigh front side tightening portion 2b and a thigh front side tightening portion 2aw (thigh lower part tightening portion) are combined on the front side of the thigh. The thigh front side tightening portion 2aw is formed from the lower part of the outside of the thigh to a connecting portion of the two tightening portions 2b and 2aw which is located at an intermediate point on the thigh front side tightening portion 2b. Furthermore, the lower part of the thigh front side tightening portion 2aw is connected to the upper part of

the crus front side tightening portion 2f which is formed on the outside of the knee. As a result of the provision of such a thigh front side tightening portion 2aw, tension can be applied to the thigh front side tightening portion 2b which is formed obliquely from the upper part to the lower part of the front side of the thigh, so that the supporting effect provided by the thigh front side tightening portion 2b can be improved. Furthermore, since tension can also be applied to the crus front side tightening portion 2f formed on the outside of the knee, the effect that supports the knee can be improved. Moreover, the width of the thigh front side supporting part 2aw can be made narrower than the width of the thigh front side tightening portion 2b and crus front side tightening portion 2f. In concrete terms, this width may be approximately 2 to 4 cm. Furthermore, in cases where the thigh front side tightening portion 2b has a curved shape that is curved in an indented shape toward the lower part of the thigh on the front side of the thigh, and the thigh front side tightening portion 2aw is connected to the thigh front side tightening portion 2b at a point immediately above the knee joint, an above-knee tightening portion is formed by this thigh front side tightening portion 2b and thigh front side tightening portion 2aw. Specifically, this above-knee tightening portion is formed from a portion corresponding to the inside of the knee joint and a portion corresponding to the outside of the knee joint to a portion corresponding to the upper side of the knee joint. The lower edge of the above-knee tightening portion is formed in an inverted V shape. Furthermore, the shape of the lower edge of the above-knee tightening portion need not always be an inverted V shape; for example, this edge may also be formed in an inverted U shape or crescent shape. Specifically, it is sufficient if the shape of the lower edge of the above-knee tightening portion is formed in a shape that is indented toward the upper part of the thigh. As a result of the formation of such an above-knee tightening portion, the stability of the knee can be improved.

[0079] Fig. 15 shows a state in which the thigh front side tightening portion 2a and a thigh front side tightening portion 2bu (thigh upper part tightening portion) are combined on the front side of the thigh. As was described above, the thigh front side tightening portion 2a is formed obliquely from the upper part to the lower part of the front surface of the thigh. The thigh front side tightening portion 2bu is formed from the upper part of the outside of the thigh to a connecting portion of the two tightening portions 2a and 2bu located at an intermediate point on the thigh front side tightening portion 2a. As a result of the provision of such a thigh front side tightening portion 2bw, tension can be applied to the thigh front side tightening portion 2a that is formed obliquely from the upper part to the lower part of the front side of the thigh, so that the supporting effect provided by the thigh front side tightening portion 2a can be improved. Furthermore, the width of the thigh front side tightening portion 2bu can be made narrower than the width of the thigh front side tightening portion 2a. In concrete terms, this width may be approximately 2 to 4 cm.

[0080] Fig. 16 shows a state in which the thigh front side tightening portion 2a and a thigh front side tightening portion 2bw (thigh lower part tightening portion) are combined on the front side of the thigh. The thigh front side tightening portion 2bw is formed from the lower part of the thigh to a connecting portion of the two tightening portions 2a and 2bw which is located at an intermediate point on the thigh front side tightening portion 2a Furthermore, the lower part of the thigh front side tightening portion 2bw is connected to the upper part of the crus front side tightening portion 2e formed on the inside of the knee. As a result of the provision of such a thigh front side tightening portion 2bw, tension can be applied to the thigh front side tightening portion 2a which is formed obliquely from the upper part to the lower part of the front side of the thigh, so that the supporting effect provided by the thigh front side tightening portion 2a can be improved. Furthermore, since tension can also be applied to the crus front side tightening portion 2e formed on the outside of the knee, the effect that supports the knee can be improved. Moreover, the width of the thigh front side tightening portion 2bw can be made narrower than the width of the thigh front side tightening portion 2a and crus front side tightening portion 2e. In concrete terms, this width may be approximately 2 to 4 cm. Furthermore, in cases where the thigh front side tightening portion 2a has a curved shape that is curved in an indented shape toward the lower part of the thigh on the front side of the thigh, and the thigh front side tightening portion 2bw is connected to the thigh front side tightening portion 2a at a point immediately above the knee joint, an above-knee tightening portion is formed by this thigh front side tightening portion 2a and thigh front side tightening portion 2bw. Specifically, this above-knee tightening portion is formed from a portion corresponding to the inside of the knee joint and a portion corresponding to the outside of the knee joint to a portion corresponding to the upper side of the knee joint. The lower edge of the above-knee tightening portion is formed in an inverted V shape. Furthermore, the shape of the lower edge of the above-knee tightening portion need not always be an inverted V shape; for example, this edge may also be formed in an inverted U shape or crescent shape. Specifically, it is sufficient if the shape of the lower edge of the above-knee tightening portion is formed in a shape that is indented toward the upper part of the thigh.

[0081] As is shown in Figs. 13 through 16, it is desirable that tightening portions 2au, 2aw, 2bu and 2bw which have an inclination that allows intersection with the thigh front side tightening portion formed obliquely from the upper part to the lower part of the front surface of the thigh, and which are formed from the upper side part or lower side part of the thigh to an intermediate point on the thigh front side tightening portion, be disposed on the front side of the thigh. Furthermore, it is desirable that these tightening portions 2au, 2aw, 2bu and 2bw be connected to the upper part of the crus front side tightening

portion formed on the outside or inside of the knee. Moreover, it is desirable that the connecting portions with the other thigh front side tightening portions 2au, 2aw, 2bu and 2bw formed at intermediate points of the thigh front side tightening portions 2a and 2b be formed in the vicinity of the center in the longitudinal direction of the thigh front side tightening portions 2a and 2b on the thigh. As a result, mutual tension can be applied more easily to the respective tightening portions.

[0082] Furthermore, the tightening portions 2au, 2aw, 2bu and 2bw shown in the Figs. 13 through 16 show as an example a case in which these tightening portions are disposed on the front side of the thigh. However, it would also be possible to dispose similar tightening portions on the rear side of the thigh. Specifically, tightening portions which have an inclination that allows intersection with the thigh rear side tightening portion formed obliquely from the upper part to the lower part of the rear surface of the thigh, and which are formed from the upper side part or lower side part of the thigh to an intermediate point on the thigh rear side tightening portion, may be disposed on the rear side of the thigh. Furthermore, these tightening portions may be connected to the upper part of the crus rear side tightening portion formed on the outside or inside of the knee.

[0083] Furthermore, the above-knee tightening portion shown in Figs. 14 and 16 may also be formed in combination with the crus front side tightening portion 2e and crus rear side tightening portion 2g. In this case, the above-knee tightening portion connects with the crus front side tightening portion 2e or crus rear side tightening portion 2g in a portion corresponding to the inside or outside of the knee. Furthermore, the crus front side tightening portion 2e and crus rear side tightening portion 2g are formed so that these tightening portions incline in respectively opposite directions with respect to the vertical direction in the crus as seen from either the front side or the rear side of the crus. Specifically, the crus front side tightening portion 2e is formed so that this tightening portion extends from the inner knee, contacts the front side of the crus, and extends to the outer ankle on the lower part of the crus. Meanwhile, the crus rear side tightening portion 2g is formed so that this tightening portion extends from the outer knee, contacts the rear side of the crus, and extends to the inner ankle on the lower part of the crus. Furthermore, the above-knee tightening portion shown in Figs. 14 and 16 may also be formed by combining the crus front side tightening portion 2f and crus rear side tightening portion 2h. In this case, the above-knee tightening portion connects with the crus front side tightening portion 2f or crus rear side tightening portion 2h in a portion corresponding to the inside or outside of the knee. Furthermore, the crus front side tightening portion 2f and crus rear side tightening portion 2h are formed so that these tightening portions respectively incline in opposite directions with respect to the vertical direction in the crus as seen from either the front side or rear side of the crus. Specifically, the crus front side tightening portion 2f is formed so that this tightening portion extends from the outer knee, contacts the front side of the crus, and extends to the inner ankle on the lower part of the crus On the other hand, the crus rear side tightening portion 2h is formed so that this tightening portion extends from the inner knee, contacts the rear side of the crus, and extends to the outer ankle on the lower part of the crus. As a result of strong tightening portions thus being formed with mutually opposite inclinations on the front and back of the crus, and thus being connected with the above-knee tightening portion, tension is applied to respective tightening portions contacting the area above the knee, the inside of the knee and the outside of the knee, so that the knee can be supported. In this case, furthermore, if no tightening portion is installed below the knee, the degree of freedom of the knee can be ensured. On the other hand, in cases where a tightening portion is disposed below the knee, the stability of the knee can be improved.

[0084] Furthermore, the above-knee tightening portion shown in Figs. 14 and 16 and the below-knee tightening portion 2v shown in Fig. 8 may be combined. As a result, the periphery of the knee is firmly supported. In this case, it is desirable that a tightening portion be formed from the upper part of the above-knee tightening portion to a portion that corresponds to at least either the inside or outside of the thigh, and that a tightening portion be formed from the lower part of the below-knee tightening portion to a portion that corresponds to at least either the inside or outside of the ankle. Furthermore, it is even more desirable that these tightening portions be formed from the upper part of the above-knee tightening portion to the upper parts of the inside and outside of the thigh, and from the lower part of the below-knee tightening portion to the lower parts of the inside and outside of the ankle (to the hem in the case of ankle length). A thigh front side tightening portion and crus front side tightening portion are formed by these tightening portions. Meanwhile, it is desirable that the thigh rear side tightening portion formed on the rear side of the thigh be inclined in the opposite direction form the thigh front side tightening portion when seen from either the front side or the rear side of the spats 1. Furthermore, it is desirable that the crus rear side tightening portion formed on the rear side of the crus be inclined in the opposite direction from the crus front side tightening portion when seen from either the front side or the rear side of the spats 1. As a result of the front and rear tightening portions thus being formed with opposite inclinations, the thigh, knee and calf are supported with a better balance.

[0085] In this manner, when the thigh is supported from front and behind with the thigh front side tightening portion and thigh rear side tightening portion, and the crus is supported from front and behind with the crus front side tightening portion and the crus rear side tightening portion, the hip joint, the knee joint, and ankle can pivot inwardly and outwardly and rotate inwardly and outwardly further easily. As the knee is supported from the left and

right by part of each tightening portion, the knee joint can bend and stretch easily.

[0086] The relationship in inclination among the respective tightening portions between the front side of the thigh and the front side of the crus, or between the rear side of the thigh and the rear side of the crus is preferably set such that the inclinations of the tightening portions of the thigh and the inclinations of the tightening portions of the crus are opposite to each other. Then, in the entire leg including the thigh and calf, muscles necessary for the inner and outer pivoting motion and the inner and outer rotating motion can be supported with a better balance.

[0087] Regarding the tightening portions formed on the thigh and crus, it suffices as far as the tightening portions formed on one of the thigh and crus are formed to clamp the thigh or crus from front and behind. In this case, the tightening portions formed on the other may be formed to clamp the crus or thigh from the left and right. This will be described in detail. For example, on the thigh, it suffices as far as tightening portions are formed to clamp the thigh from front and behind and are in contact with the inner and outer sides of the knee, while on the crus, it suffices as far as tightening portions are formed to clamp the crus from the left and right and to reach the hem. Alternatively, on the thigh, tightening portions may be formed to clamp the thigh from the left and right and are in contact with the inner and outer sides of the knee, while on the crus, tightening portions may be formed to clamp the crus from front and behind and to reach the hem. When the tightening portions are formed in this manner, the thigh or crus is firmly supported from front and behind, and the knee is firmly supported from the left and right. Hence, muscles necessary for respective movements in the inner and outer pivoting motion, inner and outer rotating motion, and bending and stretching motion can be supported with a good balance

[0088] Furthermore, in cases where the thigh is supported from the front and back by a thigh front side tightening portion and a thigh rear side tightening portion, it is sufficient if the garment has at least one of the tightening portions, i. e., either a crus front side tightening portion or a crus rear side tightening portion.

[0089] Furthermore, in cases where the thigh is supported from the front and back by a thigh front side tightening portion and a thigh rear side tightening portion, the thigh front side tightening portion and thigh rear side tightening portion may be respectively formed in substantially the same position in a portion corresponding to the front side or rear side of the thigh as seen from the front side or rear side of the thigh, or the thigh front side tightening portion and thigh rear side tightening portion may be formed so that these tightening portions are shifted in the vertical direction. For example, there is a case wherein the thigh front side tightening portion is formed above a portion corresponding to the front side of the thigh, and the thigh rear side tightening portion is formed below a portion corresponding to the rear side of the thigh. Also, there is a case wherein the thigh front side tightening portion is formed below a portion corresponding to the front side of the thigh, and the thigh rear side tightening portion is formed above a portion corresponding to the rear side of the thigh.

[0090] Furthermore, in cases where the crus is supported from the front and back by a crus front side tightening portion and a crus rear side tightening portion, the crus front side tightening portion and crus rear side tightening portion may be respectively formed in substantially the same position in a portion corresponding to the front side or rear side of the crus as seen from the front side or rear side of the crus, or the crus front side tightening portion and crus rear side tightening portion may be formed so that these tightening portions are shifted in the vertical direction. For example, there is a case wherein the crus front side tightening portion is formed above a portion corresponding to the front side of the crus, and the crus rear side tightening portion is formed below a portion corresponding to the rear side of the crus. Also, there is a case wherein the crus front side tightening portion is formed below a portion corresponding to the front side of the crus, and the crus rear side tightening portion is formed above a portion corresponding to the rear side of the crus.

[0091] Furthermore, in the present embodiment, the tightening portion 2 was described as being divided into a thigh portion and a crus portion; however, this division was made for convenience of description, and does not indicate that the tightening portion 2 is split into a thigh portion and crus portion.

[0092] The embodiment described above exemplifies cases wherein present invention is applied to ankle-length sports spats which cover the hips to crus. The present invention can also be applied to above-knee-length sports spats which cover the hips to thighs, and below-knee-length sports spats which cover from the hips to below-knee portions. The present invention can also be applied to sports spats having a portion for covering the upper half of the body above the waist, or sports spats or tights having a portion extending downward from the ankle across the sole of the foot. Furthermore, these sport spats may be sports spats that have a protective pad in the crotch area.

[0093] A practical example of the above-knee-length sports spats will be described with reference to Figs. 17 to 21. Fig. 17A is a front view of the above-knee-length sports spats and shows a state wherein the thigh front side tightening portion 2b described above is formed on the front side of the thigh. Fig. 17B is a rear view of the above-knee-length sports spats and shows a state wherein the thigh rear side tightening portion 2c and thigh rear side tightening portion 2d described above are formed on the rear side of the thigh. In the spats shown in Figs. 17A and 17B, on the thigh, the thigh front side tightening portion 2b and thigh rear side tightening portion 2c are formed to incline in the same direction, and the thigh front side tightening portion 2b an thigh rear

side tightening portion 2d are formed to incline in opposite directions. The thigh front side tightening portion 2b contacts the side part of the pelvic region including the greater trochanter 113, and is formed in a portion that extends in the upper direction along the side part of the pelvic region and reaches the waist. The thigh rear side tightening portion 2c connects with the thigh front side tightening portion 2b at the side part of the pelvic region, and further contacts the upper part of the pelvic region as well; the left and right thigh rear side tightening portions are connected at the rear center of the upper part of the pelvic region. As a result of such a connection, tension is mutually applied to the thigh rear side tightening portion 2c and thigh front side tightening portion 2b, so that the effect that supports the muscles of the thigh is increased, and so that the knee joint is supported. Furthermore, the upper ends of the thigh rear side tightening portions 2d located on the left and right thighs are connected in the vicinity of the connecting point of the hip bones (lower part of the natal cleft). As a result, tension is mutually applied to the thigh rear side tightening portions 2d located on the left and right thighs. Furthermore, the upper part of thigh rear side tightening portion 2d may be positioned on the inside upper part of the rear side of the thigh (below the crotch). Furthermore, the lower end of thigh front side tightening portion 2b and the lower end of thigh rear side tightening portion 2c are positioned at the hem part S on the inside of the thigh, and the lower end of thigh rear side tightening portion 2d is positioned at the hem part S on the outside of the thigh. The lower end of this thigh front side tightening portion 2b and the lower end of the thigh rear side tightening portion 2c are connected on the inside of the thigh. It is desirable that the vertical width of this connection area be approximately 5 to 10 cm. When the respective tightening portions are formed in this manner, the wearer's thigh is firmly supported from front and behind. Of the lower end of a thigh front side tightening portion 2a, the lower end of the thigh rear side tightening portion 2c, and the lower end of the thigh rear side tightening portion 2d, all the lower ends need not be located at the hem S of the sports spats, but it suffices as far as at least either one lower end is located at the hem S. Also, the lower end position of the tightening portion 2 as described above applies to the above-knee length sports spats, shown in Fig. 18 through Fig. 21 described below, as well.

[0094] Fig. 18 (a) is a diagram showing above-knee length sports spats as seen from the front surface. This diagram shows a state in which the thigh front side tightening portion 2b is formed on the front side of [each] thigh, and abdomen tightening portions 2x are formed on the abdomen. Fig. 18 (b) is a diagram which shows these above-knee length sports spats as from the back surface. This diagram shows a state in which a thigh rear side tightening portion 2cw which is the lower part of the thigh rear side tightening portion 2c, and a thigh rear side tightening portion 2d, are formed on the rear side of [each] thigh. The abdomen tightening portions 2x shown in Fig. 18 (a) connects with the thigh front side tightening portions 2b at the side parts of the pelvic region. The abdomen tightening portions 2x located on the left and right connect with each other at the center of the abdomen. As a result, the thigh front side tightening portions 2b that contact both side parts of the pelvic region can be pulled toward the center of the body, so that the hip joints can be stabilized. Specifically, as a result of the formation of the abdomen tightening portions 2x, a force that pulls both side parts of the pelvic region toward the inside can be applied, so that the pelvis can be stabilized. It is desirable that the abdomen tighten portions 2x be formed so that these portions contact an area above the lower abdomen. As a result, pressure on the lower abdomen near the crotch can be prevented. Furthermore, the material of the abdomen tightening portions 2x may be a separate material that has a weaker tightening force than the material of the thigh front side tightening portions 2b, or may be the same material as that of the thigh front side tightening portions 2b. The abdomen tightening portions 2x and thigh front side tightening portions 2b may be continuous, and may be constructed from the same material. Furthermore, it is desirable that the width of the abdomen tightening portions 2x is 2 cm or greater, and a width of approximately 5 to 15 cm is even more desirable. The width of the abdomen tightening portions 2x may be a uniform width; alternatively, the width of the abdomen tightening portions 2x may narrow toward the center of the body from the side parts of the pelvic region, or may increase toward the center of the body from the side parts of the pelvic region. Furthermore, the abdomen tightening portions 2x may be sewed to the inside of the main body cloth, or may be sewed to the outside of the main body cloth. The connecting portions between the abdomen tightening portions 2x and the thigh front side tightening portions 2b are sewed to the main body cloth; however, the upper edges and lower edges of the abdomen tightening portions 2x may be in a floating state without being sewed to the main body cloth. Furthermore, the thigh rear side tightening portions 2cw shown in Fig. 18 (b) connect with parts of the thigh rear side tightening portions 2d located near the center of the rear side of each thigh, and are formed only on the lower inside of each thigh. Furthermore, thigh rear side tightening portions 2cw and thigh front side tightening portions 2b may be connected on the lower inside of each thigh.

[0095] Fig. 19 (a) is a diagram showing above-knee length sports spats as seen from the front surface. This diagram shows a state in which the thigh front side tightening portions 2b are formed on the front side of each thigh, and abdomen tightening portions 2y are formed on the abdomen. Fig. 19 (b) is a diagram which shows these above-knee length sports spats as seen from the back surface; this diagram shows a state in which thigh rear side tightening portions 2cu which are the upper portions of the thigh rear side tightening portions 2c, and thigh rear side tightening portions 2d, are formed on the rear side of each thigh. The abdomen tightening portions 2y

shown in Fig. 19 (a) are connected with the thigh front side tightening portions 2b at the side parts of the pelvic region. These abdomen tightening portions 2y are formed so as to contact the upper abdomen. As a result, the thigh front side tightening portions 2b contacting both side parts of the pelvic region can be pulled toward the center of the body, so that the hip joints can be stabilized. Specifically, as a result of the formation of the abdomen tightening portions 2y, both side parts of the pelvic region can be pulled toward the inside, so that the pelvis can be stabilized. The abdomen tightening portions 2y have a maximum width in the connecting portions with the thigh front side tightening portions 2b, and these tightening portions extend to a point beyond the front center of the body with the width of the tightening portions gradually decreasing toward the front center of the body. Accordingly, the abdomen tightening portions 2y located on the left and right overlap in the portions that extend beyond the front center of the body Furthermore, it is desirable that the width of the widest portions be approximately 10 cm. Moreover, the material of the abdomen tightening portions 2y may be a separate material from that of the thigh front side tightening portions 2b, or may be the same material as that of the thigh front side tightening portions 2b. The abdomen tightening portions 2y and thigh front side tightening portions 2b may be continuous, and may be constructed from the same material. Furthermore, the connecting portions between the abdomen tightening portions 2y and thigh front side tightening portions 2b are sewed to the main body cloth; however, either the upper cdges or the lower edges of the abdomen tightening portions 2y may be in a floating state without being sewed to the main body cloth. Furthermore, the thigh rear side tightening portions 2cu shown in Fig. 19 (b) connect with parts of the thigh rear side tightening portions 2d located near the center of the rear side of each thigh, and contact the upper outside of each thigh; these connect with the thigh front side tightening portions in the vicinity of the greater trochanter, and are formed on the upper part of the pelvic region.

[0096] Fig. 20 (a) is a diagram showing above-knee length sports spats as seen from the front surface; this diagram shows a state in which the thigh front side tightening portions 2b are formed on the front side of each thigh, and abdomen tightening portions 2z are formed on the abdomen. Fig. 20 (b) is a diagram which shows these above-knee length sports spats as seen from the back surface; this diagram shows a state in which the thigh rear side tightening portions 2c, and thigh rear side tightening portions 2dw which are the lower parts of the thigh rear side tightening portions 2d, are formed on the rear side of each thigh. The abdomen tightening portions 2z shown in Fig. 20 (a) are formed by a material that is continuous with the thigh front side tightening portions 2b. Furthermore, the material of the abdomen tightening portions 2z may also be a separate material from that of the thigh front side tightening portions 2b. The abdomen tightening portions 2z have a maximum width in the portions that are continuous with the thigh front side tightening portions 2b, and this width gradually decreases toward the front center of the body. Furthermore, it is desirable that the width of the widest portion be approximately 10 cm, and it is desirable that the width of the narrowest portion be approximately 5 cm. Furthermore, the abdomen tightening portions 2z located on the left and right arc connected to each other at the front center of the body. As a result, the thigh front side tightening portions 2b contacting both side parts of the pelvic region can be pulled toward the center of the body, so that the hip joints can be stabilized. Specifically, as a result of the formation of the abdomen tightening portions 2z, a force that pulls both side parts of the pelvic region toward the inside can be applied, so that the pelvis can be stabilized. Furthermore, either the upper edges or the lower edges of the abdomen tightening portions 2z may be in a floating state without being sewed to the main body cloth. Furthermore, the thigh rear side tightening portions 2dw shown in Fig. 20 (b) connect with parts of the thigh rear side tightening portions 2c located near the center of the rear side of each thigh, and are formed only on the lower outside of each thigh. Moreover, thigh front side tightening portions 2b and thigh rear side tightening portions 2c are connected in the vicinity of the greater trochanter on the lower inside of each thigh and upper outside of each thigh. Furthermore, the three types of the abdomen tightening portions 2x, 2y and 2z described above may be appropriately combined with various tightening portions described in the other embodiments (ankle length sports spats) described above.

[0097] Furthermore, the abdomen tightening portions 2x, 2y and 2z shown in Figs. 18A, 19A and 20A connect the thigh front side tightening portions 2b formed in portions corresponding to the left and right side parts of the pelvic region; however, the tightening portions connected by the abdomen tightening portions 2x, 2y and 2z are not limited to the thigh front side tightening portions 2b. For example, these tightening portions may also be thigh rear side tightening portions, or other tightening portions formed in portions corresponding to both the left and right side parts of the pelvic region. Specifically, in the description relating to the Figs. 18 through 20, the thigh front side tightening portions 2b were used for convenience of description as the tightening portions connected by the abdomen tightening portions 2x, 2y and 2z; however, the tightening portions connected by the abdomen tightening portions 2x, 2y and 2z may be pelvic region tightening portions formed in portions corresponding to the left and right side parts of the pelvic region. By having the abdomen tightening portions 2x, 2y and 2z connected to the sections of the pelvic region tightening portion corresponding to the left and right sides of the pelvic region, tension can be applied to the pelvic region tightening portion. Also, this type of abdomen tightening portion and pelvic region tightening portion can be combined with the various tightening portions formed at the thigh, the knee, and the lower thigh in the embodiments described above.

[0098] Fig. 21A is a diagram of above-knee length sports spats as seen from the front surface; this diagram shows a state in which thigh front side tightening portion 2bx that are modifications of the thigh front side tightening portions 2b are formed on the front side of each thigh. Fig. 21B is a diagram of these above-knee length sports spats as seen from the back surface; this diagram shows a state in which the thigh rear side tightening portions 2c, and thigh rear side tightening portions 2du that are the upper portions of the thigh rear side tightening portions 2d, are formed on the rear side of each thigh. The thigh front side tightening portions 2bx shown in Fig. 21A are formed by curving the line of the thigh front side tightening portions 2b in an indented shape toward the upper part on the front surface of each thigh. The thigh front side tightening portions 2bx are formed so that these tightening portions contact portions that extend from the vicinity of the greater trochanter 113, pass over the upper portion of the front surface of the thigh, and reach the lower inside of the thigh. Specifically, the thigh front side tightening portions 2bx reach the greater trochanter without passing over the bulge of the rectus femoris. Accordingly, compared to a case in which the thigh front side tightening portions 2bx are formed with a rectilinear shape, an effect that prevents pressure on the bulge of the muscles when the rectus femoris bulges outward is obtained to the extent that the tightening portions do not pass over the bulge of the rectus femoris. The thigh front side tightening portions 2bx connect with the thigh rear side tightening portions 2c shown in Fig. 21B from the vicinity of the greater trochanter in the side parts of the pelvic region. The lower parts of the thigh front side tightening portions 2bx connect with the lower parts of the thigh rear side tightening portions 2c at the lower inside of each thigh. Furthermore, it is desirable that the width of the thigh front side tightening portions 2bx be approximately 10 to 15 cm in the portions of maximum width that contact the areas in the vicinity of the side parts of the pelvic region, and that this width be approximately 4 to 5 cm in the portions of minimum width that contact the thighs. It is desirable that the vertical width of the connecting portions between the lower parts of the thigh front side tightening portions 2bx and the lower parts of the thigh rear side tightening portions 2c on the insides of the thighs be approximately 8 cm. As a result of the formation of such thigh front side tightening portions 2bx, muscular contractions on the front surfaces of the thighs can be supported. Furthermore, the thigh rear side tightening portions 2du shown in Fig. 21B connect with parts of the thigh rear side tightening portions 2c located near the center of the rear side of each thigh, and are formed only on the upper inside of each thigh.

[0099] Furthermore, concrete examples of the respective tightening portions formed in the above-knee length sports spats (Figs. 17 through 21) may also be applied to ankle length sports spats, below-knee length sports spats or the like.

[0100] Furthermore, in sports spats, the tightening portions formed on the pelvic region above the thighs may also be formed as follows. For example, these tightening portions may be formed in locations including the greater trochanter on the outsides of the thighs, and may further contact the side parts of the pelvic region from the greater trochanter, and be formed continuously in a substantially rectilinear shape to the waist. Furthermore, these tightening portions may contact the side parts of the pelvic region and the area above the swell of the hips from the greater trochanter, and may terminate at the waistline. Alternatively, these tightening portions may extend from the area above the swell of the hips toward the rear center, and the left and right tightening portions may be connected in the vicinity of the rear center of the waistline. The tightening portion may extend from the greater trochanter along part of the bulge of the hips and its left and right portions may be connected to each other near the rear center of the waist line. The tightening portion may extend from the greater trochanter along the abdomen and its left and right portions may be connected to each other at the center of the abdomen. The tightening portion may be formed by combining these tightening portions.

[0101] The method of adding a tightening portion to the garment with a crotch according to the present invention is not limited to the method described in the above embodiment. For example, a stretchable cloth having a predetermined shape may be overlaid on the main body of a garment with a crotch and be sewn together, thus forming a tightening portion, or a stretchable cloth having a predetermined shape may be overlaid on the main body of a garment with a crotch and be adhered to it, thus forming a tightening portion. If such methods are used, the difference in the tightening force between the main body of the garment and the tightening portions can easily be set in an appropriate manner; furthermore, a large tightening force difference can be achieved. A tightening portion and other portions may be formed as parts having predetermined shapes, and may be connected to each other, thus forming a garment with a crotch according to the present invention. The tightening portion may be formed by the method of stretching a stretchable cloth having a predetermined shape and overlaying it on the main body of a garment with a crotch, and sewing or adhering them together. Furthermore, in cases where a material that is stretchable is overlaid on the garment with a crotch, it is desirable that the tightening force of this stretchable material that forms the tightening portions be stronger than the tightening force of the main body of the garment with a crotch. According to these methods, a strong tightening force can be obtained by the tightening portion. Alternatively, the tightening portion may be formed by the method of impregnating with an elastic resin a predetermined portion of the main body of a garment with a crotch, or adhering an elastic resin film to the predetermined portion of the main body of a garment with a crotch. According to these methods, a garment with a comparatively thin tightening portion can be obtained. As the elastic resin, a polyurethane resin, a pol-

yester elastomer resin, or other elastic resins can be employed. According to these methods, overlaying need not be performed, so a garment with a thinner tightening portion can be obtained. Furthermore, tightening portions may be formed by a knitted fabric with a strong tightening force by varying the knitted fabric of the stretchable material forming the main body of the garment with a crotch by means of jacquard weaving such as warp knitting or circular knitting, so that a difference in the strength of the tightening force is obtained. According to these methods, overlaying need not be performed, so a garment with a thinner tightening portion can be obtained. Furthermore, in cases where a circular knit material or the like is used as the material that forms the garment with a crotch, tightening portions with a relatively strong tightening force can also be formed by cut-boss knitting in which yarn is partially added. In the case of circular knitting, a difference in the strength of the tightening force can also be obtained by combining a method that varies the knitted fabric and a cut-boss knitting method in which yam is partially added.

[0102] Although the embodiment described above exemplifies sports spats as a typical example of a garment with a crotch, the present invention can also be applied to garments other than sports spats. For example, the present invention can also be applied to a garment with a crotch such as girdles, sports tights, spats-type swimming wear, sports wear, panty hoses, and tights.

[0103] With the garment with the crotch according to the present invention, as the motions of muscles necessary for the bending and stretching motion, the inner and outer pivoting motion and the inner and outer rotating motion can be supported by the band-like tightening portion, an excellent effect that the motion of the leg can be supported with a good balance can be expected.

Industrial Applicability

[0104] The present invention relates to a sports garment with a crotch that support the motion of the leg with a good balance.

Claims

1. A garment with a crotch for covering at least part of the lower half of a body, **characterized in that** a band-like tightening portion at least has, at a front side portion corresponding to the front side of a thigh, a thigh front side tightening portion formed obliquely from above to below the front side portion, and, at a rear side portion corresponding to the rear side of the thigh, a thigh rear side tightening portion formed obliquely from above to below the rear side portion.

2. The garment with a crotch according to claim 1, **characterized in that** the thigh front side tightening portion and the thigh rear side tightening portion respectively incline in opposite directions with respect to a vertical direction when seen from either the front side or rear side.

3. the garment with a crotch according to claim 1, **characterized in that** the thigh front side tightening portion and the thigh rear side tightening portion respectively incline in same direction with respect to a vertical direction when seen from either the front side or rear side.

4. the garment with a crotch according to claim 3, **characterized in that** the thigh front side tightening portion and the thigh rear side tightening portion are continuous on at least either an inside of the thigh or an outside of the thigh.

5. the garment with a crotch according to any one of claims 1 through 4, **characterized in that** part of the tightening portion is formed at a portion corresponding to a greater trochanter.

6. The garment with a crotch according to any one of claims 1 through 4, **characterized in that** the tightening portion further has a thigh lower part tightening portion which is formed obliquely from an intermediate point on at least either the thigh front side tightening portion or thigh rear side tightening portion to the lower inside of the thigh or lower outside of the thigh.

7. The garment with a crotch according to claim 6, **characterized in that** a width of the thigh lower part tightening portion is narrower than a width of the thigh front side tightening portion and thigh rear side tightening portion.

8. The garment with a crotch according to claim 6 or 7, **characterized in that** the thigh lower part tightening portion is formed from the vicinity of the center in the longitudinal direction of at least either the thigh front side tightening portion or thigh rear side tightening portion at the thigh.

9. The garment with a crotch according to any one of claims 6 through 8, **characterized in that** one part of the thigh lower part tightening portion is formed in a portion corresponding to the inside of the knee or the outside of the knee.

10. The garment with a crotch according to any one of claims 6 through 8, **characterized in that** the thigh lower part tightening portion connects the thigh front side tightening portion or thigh rear side tightening portion with another tightening portion that is formed in a portion corresponding to the inside of the knee or the outside of the knee.

11. The garment with a crotch according to any of claims 1 through 4, **characterized in that** the tightening portion further has a thigh upper part tightening portion which is formed obliquely from an intermediate point on at least either the thigh front side tightening portion or thigh rear side tightening portion to the upper inside of the thigh or the upper outside of the thigh.

12. The garment with a crotch according to claim 11, **characterized in that** a width of the thigh upper part tightening portion is narrower than a width of the thigh front side tightening portion and thigh rear side tightening portion.

13. The garment with a crotch according to claim 11, **characterized in that** the thigh upper part tightening portion is formed from the vicinity of the center in the longitudinal direction of at least either the thigh front side tightening portion or thigh rear side tightening portion at the thigh.

14. The garment with a crotch according to any one of claims 1 through 13, **characterized in that** the tightening portion further has a crus front side tightening portion which is formed obliquely at the front portion corresponding to the front side of the crus from above to below this front side portion.

15. The garment with a crotch according to any one of claims 1 through 14, **characterized in that** the tightening portion further has a crus rear side tightening portion which is formed obliquely at the rear portion corresponding to the rear side of the crus from above to below this rear side portion.

16. A garment with a crotch for covering at least part of a lower half of a body, **characterized in that**
a band-like tightening portion at least has, at a front side portion corresponding to a front side of a crus, a crus front side tightening portion formed obliquely from above to below the front side portion and, at a rear side portion corresponding to a rear side of the curs, a crus rear side tightening portion formed obliquely from above to below the rear side portion.

17. the garment with a crotch according to claim 16, **characterized in that** the crus front side tightening portion and the crus rear side tightening portion respectively incline in opposite directions with respect to a vertical direction when seen from either the front side or rear side.

18. the garment with a crotch according to claim 16, **characterized in that** the crus front side tightening portion and the crus rear side tightening portion respectively incline in same direction with respect to a vertical direction when seen from either the front side or rear side.

19. the garment with a crotch according to claim 18, **characterized in that** the crus front side tightening portion and the crus rear side tightening portion are continuous on at least either an inside of the crus or an outside of the crus.

20. The garment with a crotch according to claim 18, **characterized in that** the crus front side tightening portion and crus rear side tightening portion are continuous on both the inside of the crus and the outside of the crus.

21. the garment with a crotch according to any one of claims 1 through 20, **characterized in that** part of the tightening portion is formed at a portion corresponding to at least either an inside of a knee or an outside of the knee.

22. The garment with a crotch according to any one of claims 1 through 21, **characterized in that** the tightening portion further has a below-knee tightening portion which is formed from a portion corresponding to the inside of the knee and a portion corresponding to the outside of the knee to a portion corresponding to the area below the knee, and the upper edge of the below-knee tightening portion is formed in shape that is indented toward the lower part of the crus.

23. the garment with a crotch according to claim 22, **characterized in that** the tightening portion is formed to further extend from a lower portion of the below-knee tightening portion to a portion corresponding to at least either one of an inner side of an ankle and an outer side of the ankle.

24. the garment with a crotch according to claim 23, **characterized in that** the portion corresponding to an upper side of the knee is formed of a soft tightening portion having a softer tightening portion than that of the tightening portion.

25. The garment with a crotch according to any one of claims 1 through 23, **characterized in that** the tightening portion further has an above-knee tightening portion which is formed from a portion corresponding to the inside of the knee and a portion corresponding to the outside of the knee to a portion corresponding to the upper side of the knee, and that the lower edge of the above-knee tightening portion is formed in a shape that is indented toward the upper part of the thigh.

26. the garment with a crotch according to claim 1, **characterized in that**
the garment has a hem part formed in a portion corresponding to the area above a knee, and

at least either the lower end of the thigh front side tightening portion or the lower end of the thigh rear side tightening portion is located at the hem part.

27. The garment with a crotch according to any one of claims 1 through 26, **characterized in that** the tightening portion further has pelvic region tightening portions which are formed in portions corresponding to the left and right side portions of the pelvic region, and an abdomen tightening portion which is formed in a portion corresponding to the abdomen, and the abdomen tightening portion connects the pelvic region tightening portions located on the left and right sides.

28. The garment with a crotch according to claim 26, **characterized in that** the upper part of the thigh front side tightening portion and the upper part of the thigh rear side tightening portion are connected in a portion corresponding to the side part of the pelvic region, and the lower part of the thigh front side tightening portion and the lower part of the thigh rear side tightening portion are connected in a portion corresponding to the lower part of the inside of the thigh.

29. The garment with a crotch according to claim 1 through 26, **characterized in that** the thigh front side tightening portion is formed from the lower part of the inside of the thigh to the greater trochanter via the upper part of the front surface of the thigh, and is formed so that this portion is curved in an indented shape toward the upper part of the thigh.

Fig.1

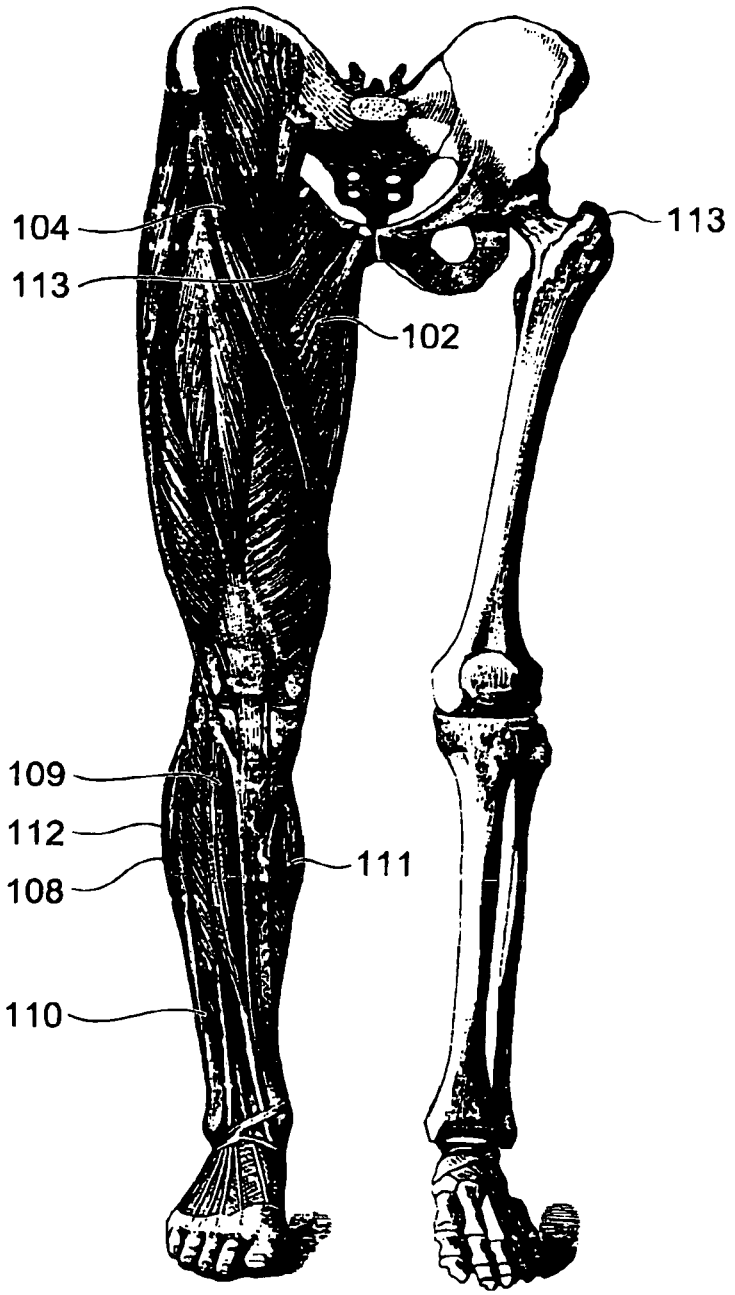


Fig.2

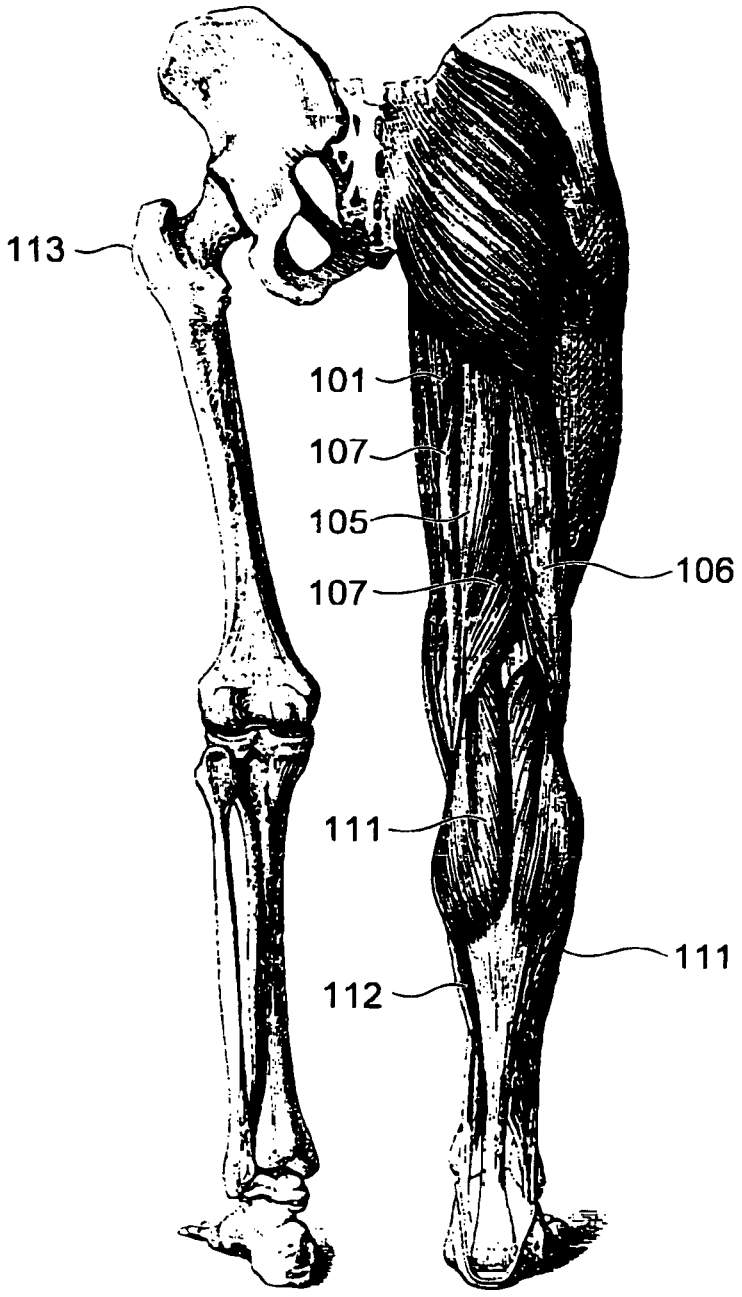


Fig.3

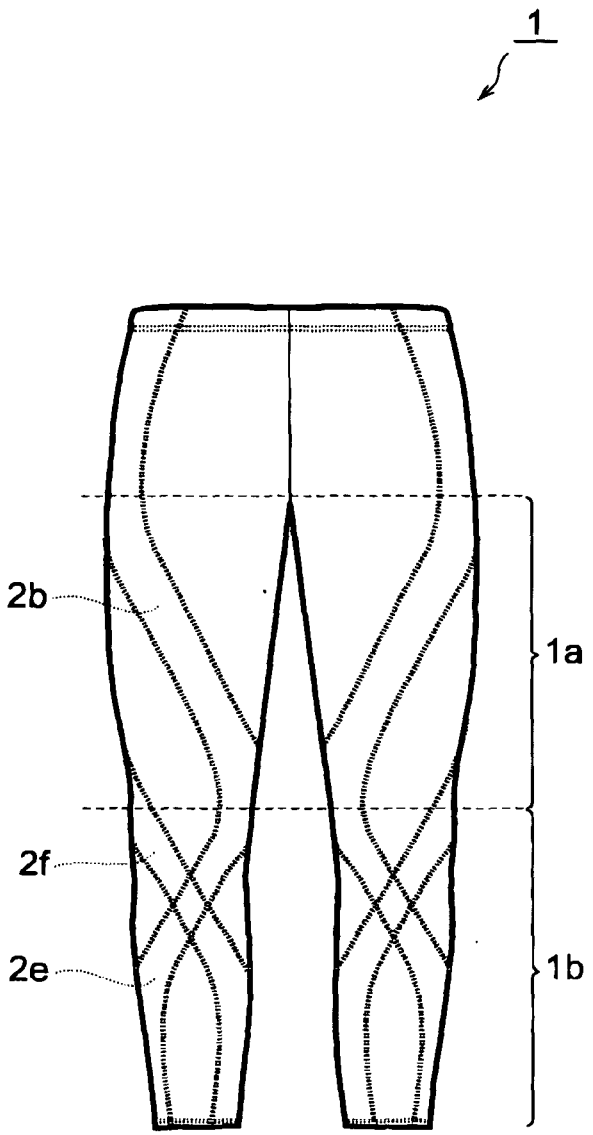


Fig.4

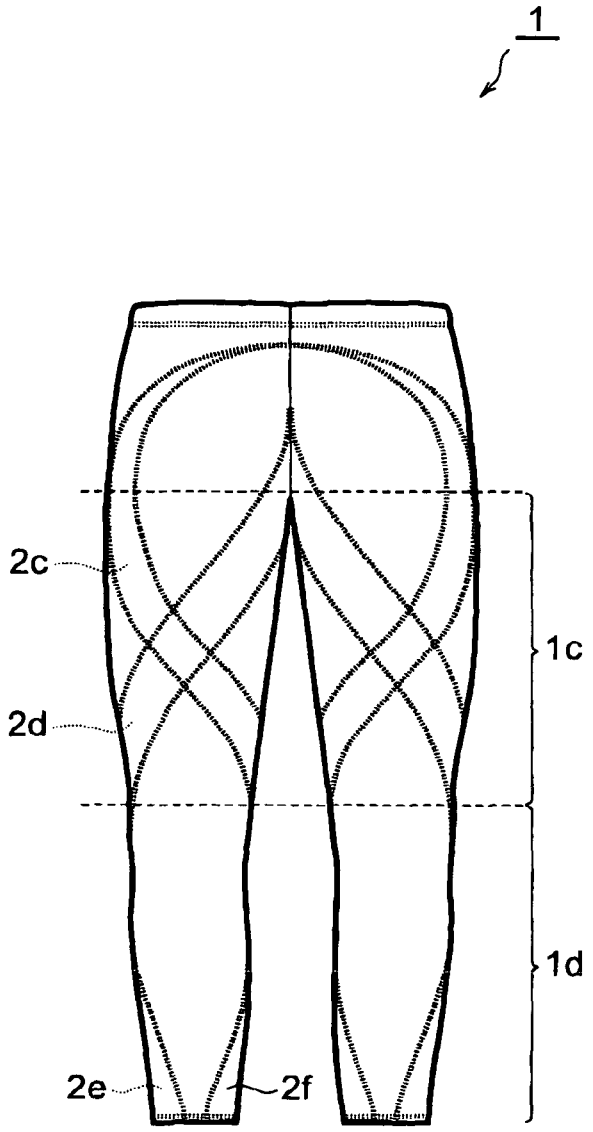


Fig.5

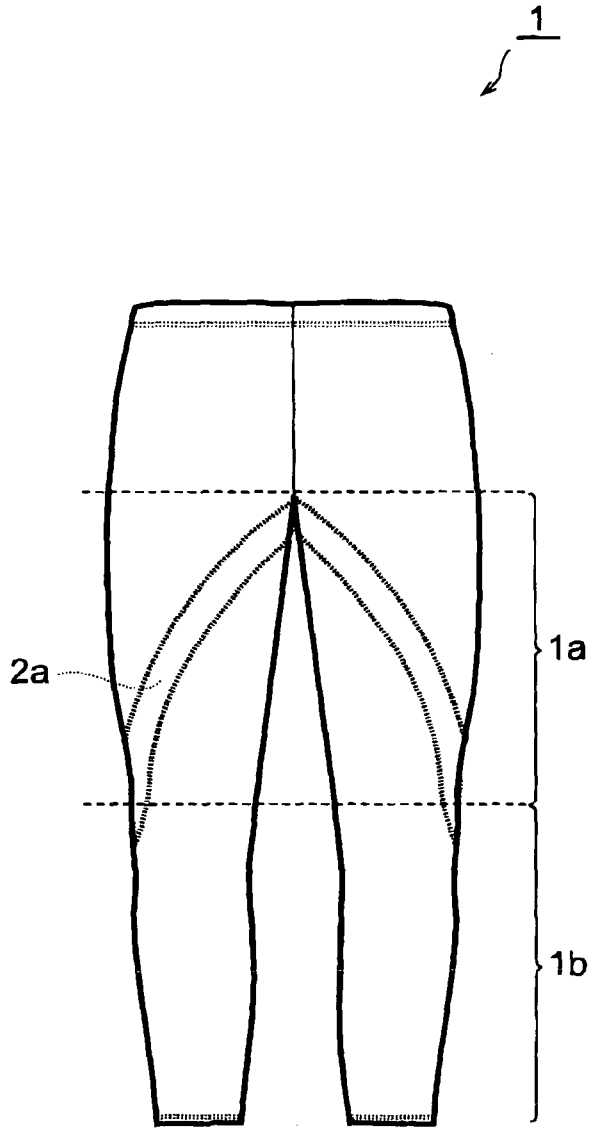


Fig.6

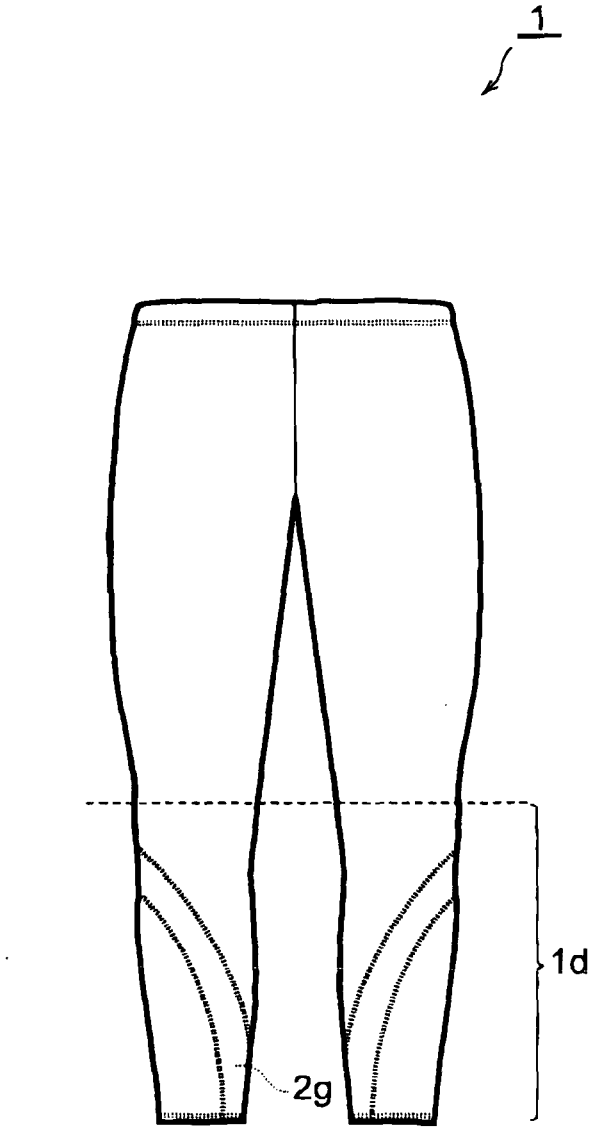


Fig.7

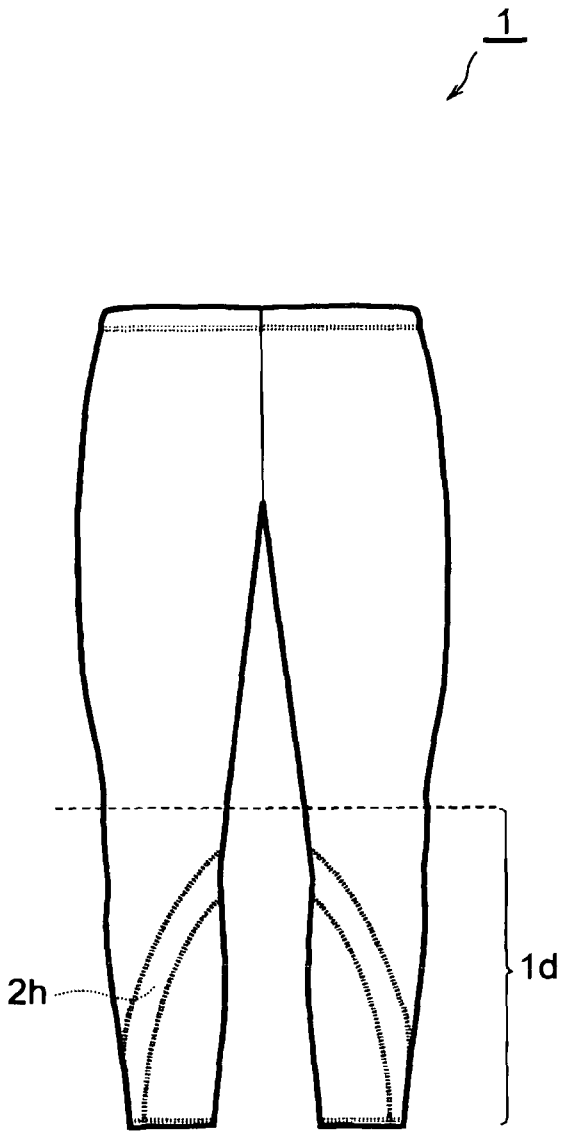


Fig.8

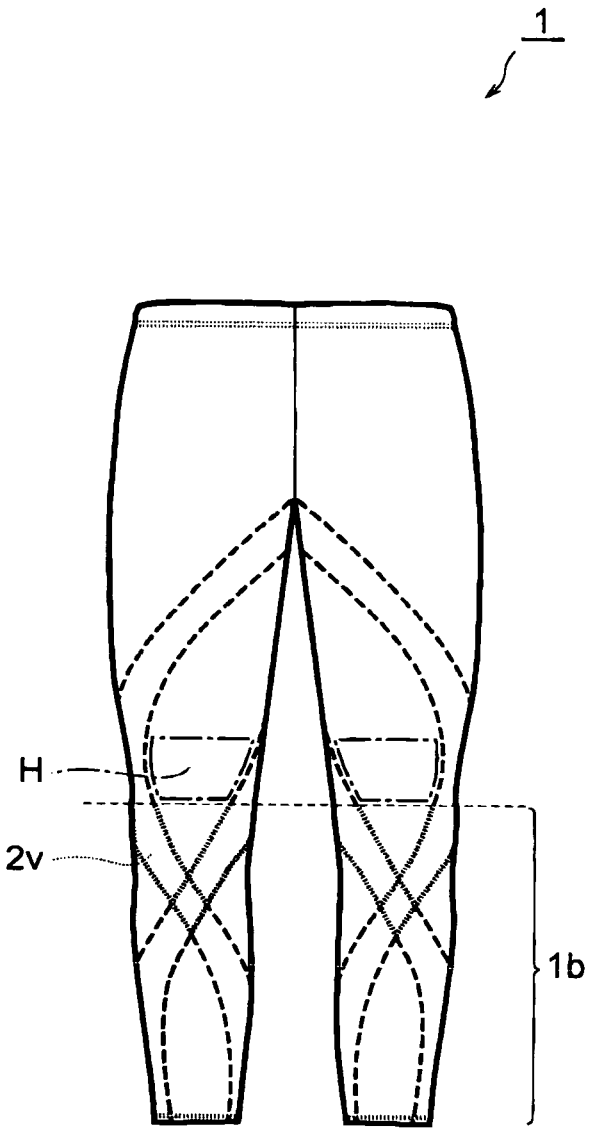


Fig.9B

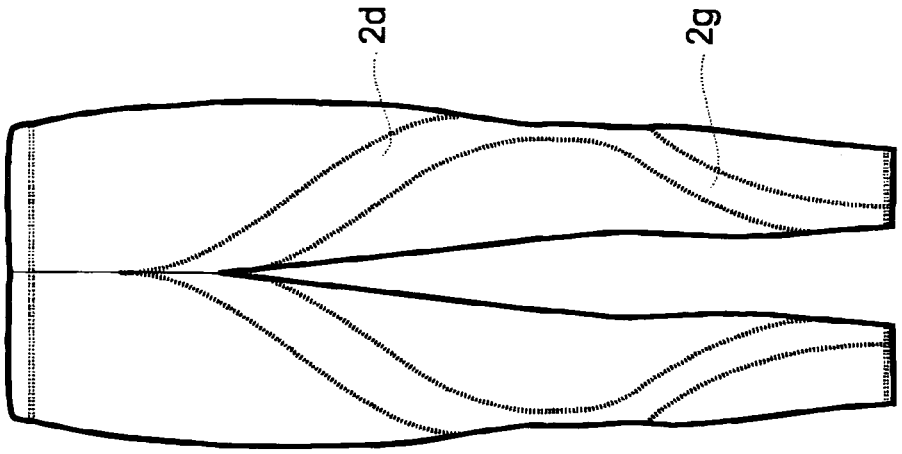


Fig.9A

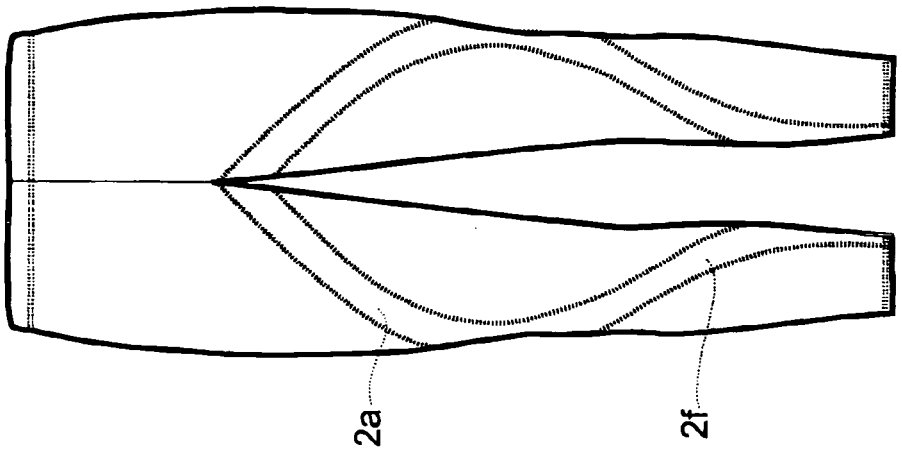


Fig.10B

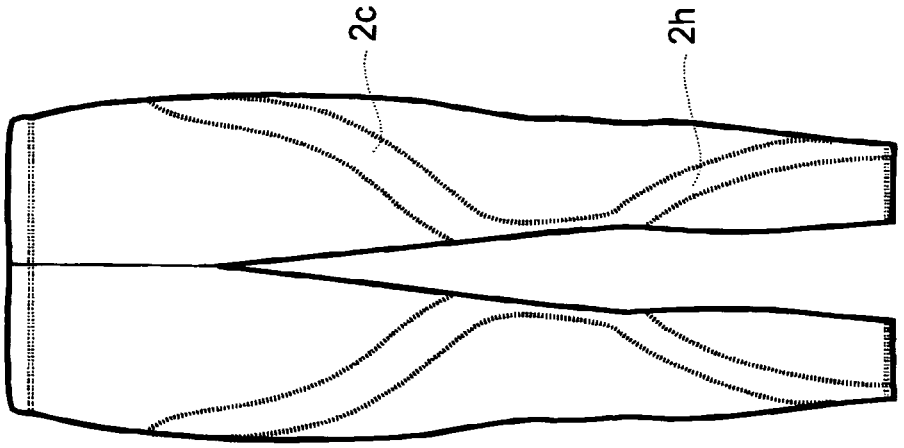


Fig.10A

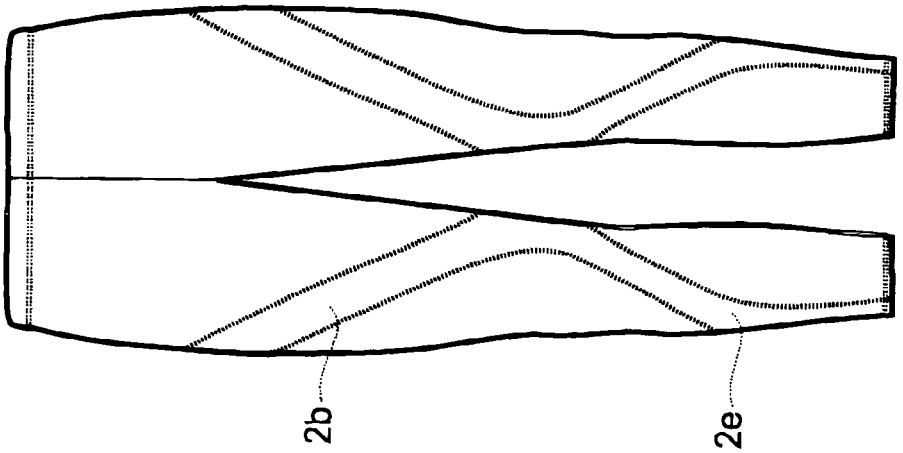


Fig.11B

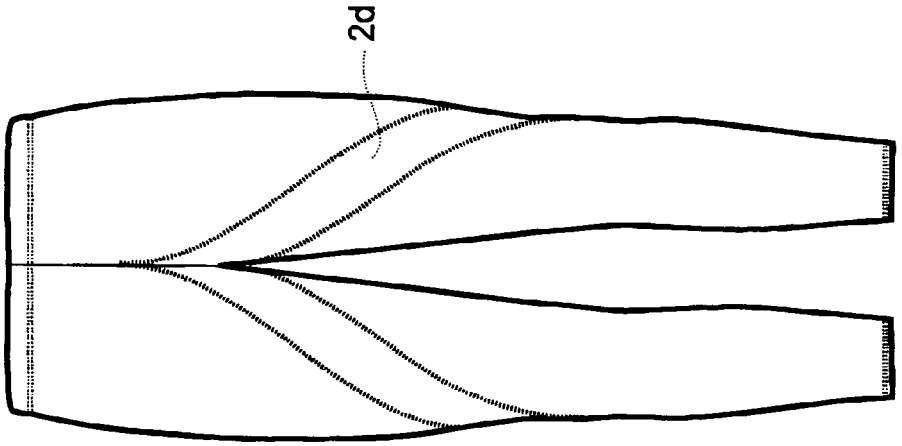


Fig.11A

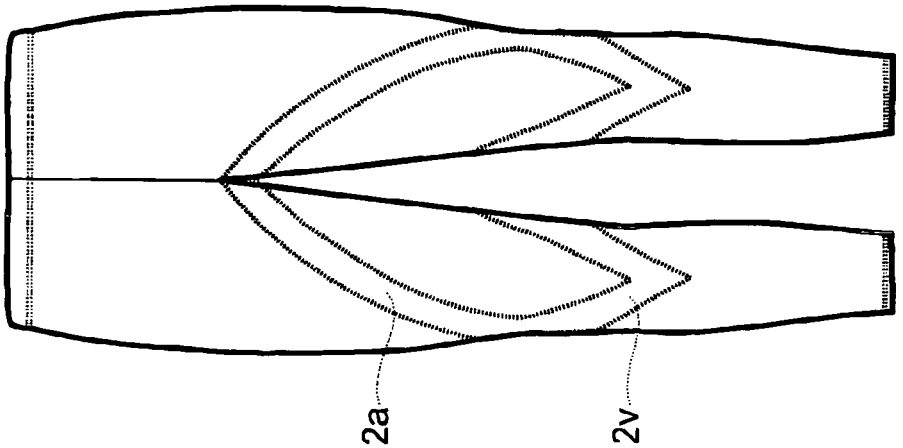


Fig.12B

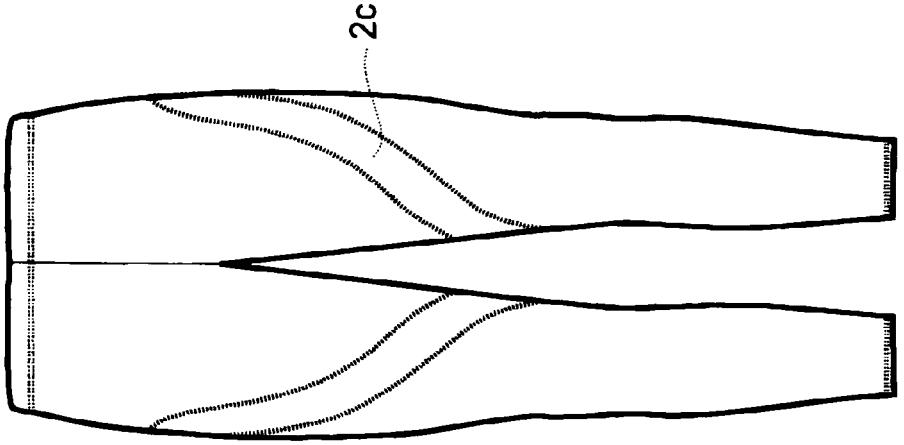


Fig.12A

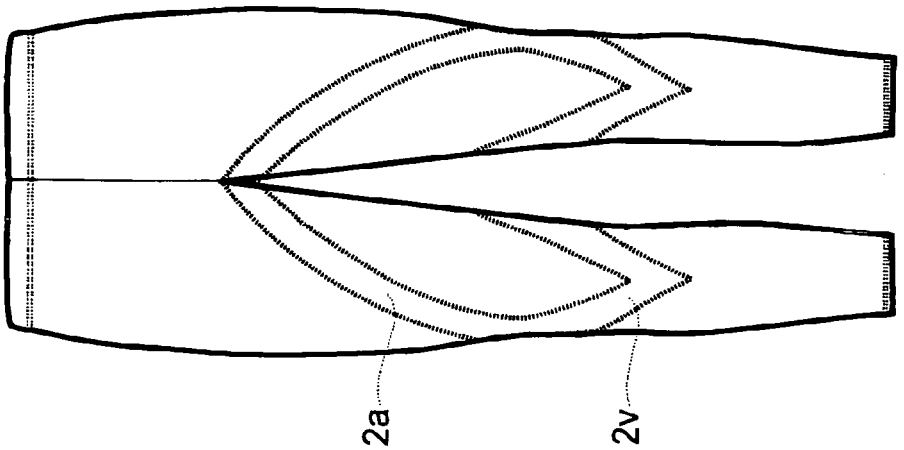


Fig.13

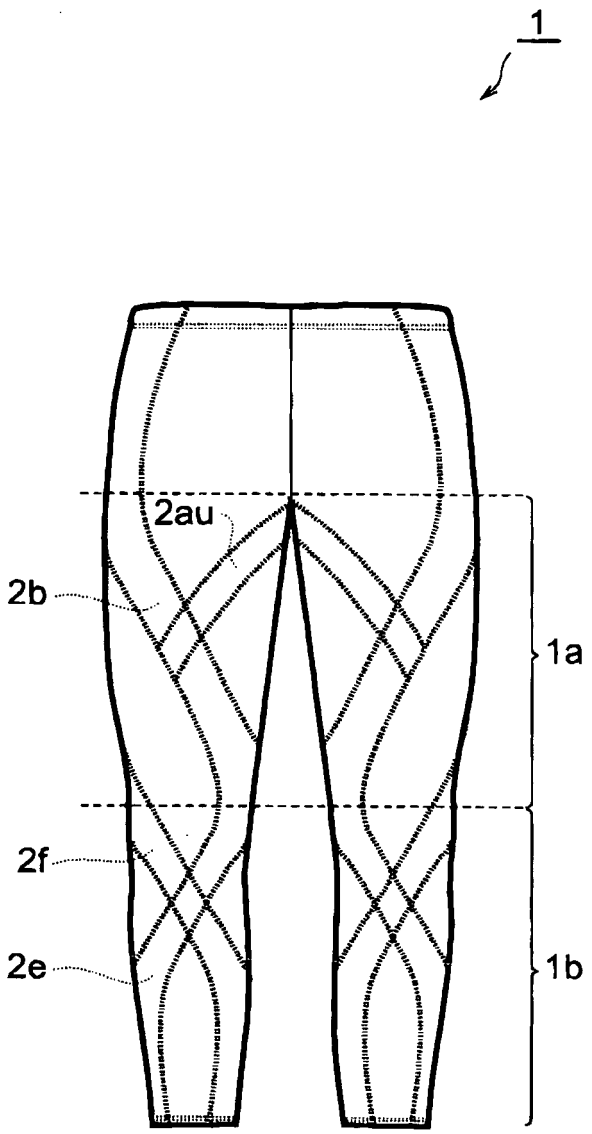


Fig.14

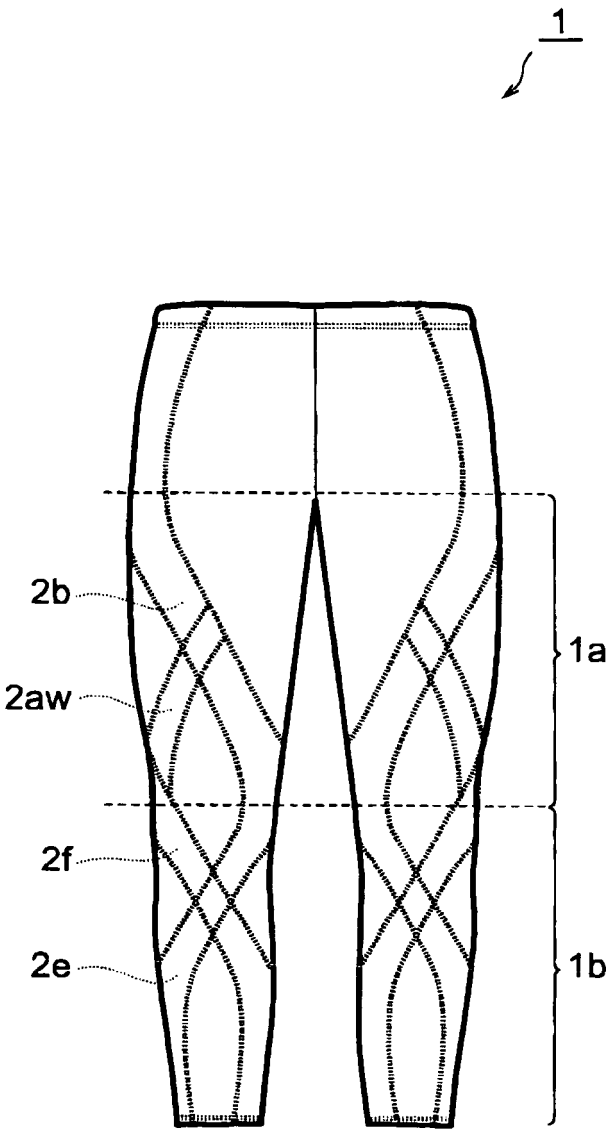


Fig.15

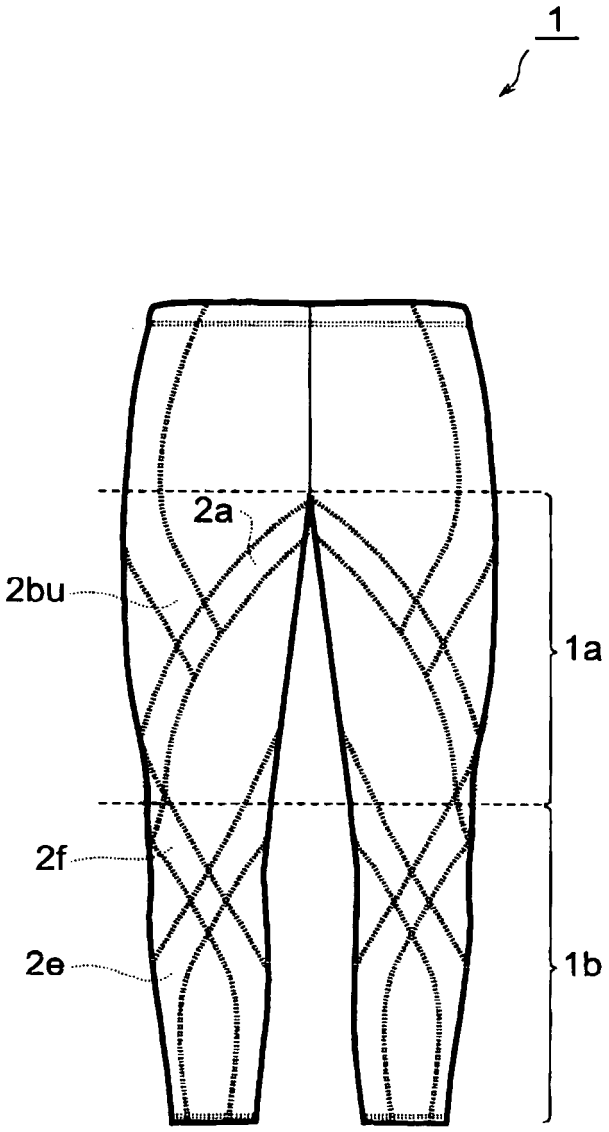


Fig.16

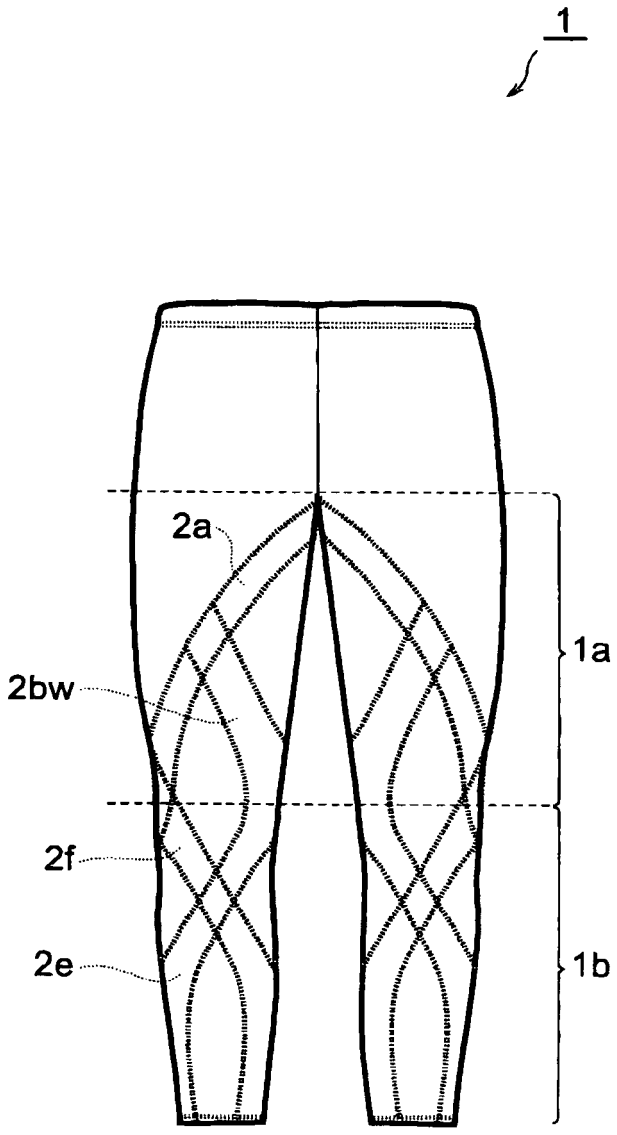


Fig.17B

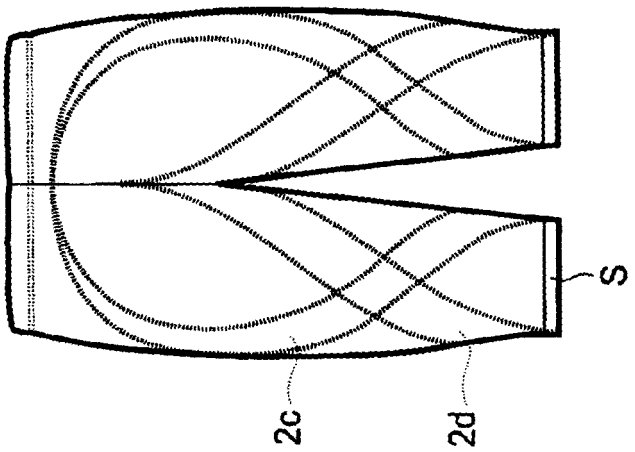


Fig.17A

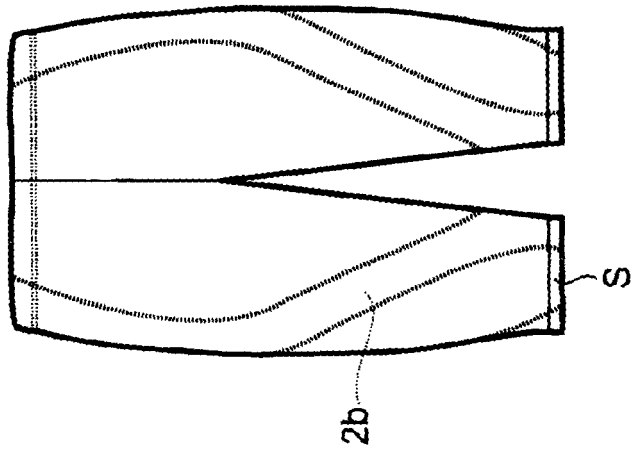


Fig.18B

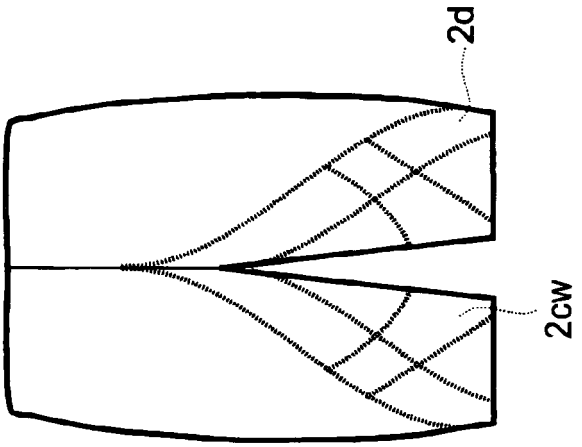


Fig.18A

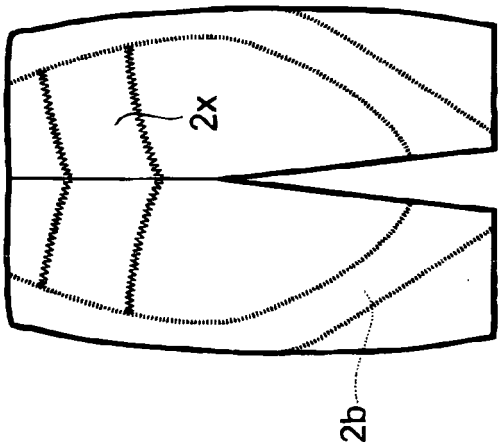


Fig.19B

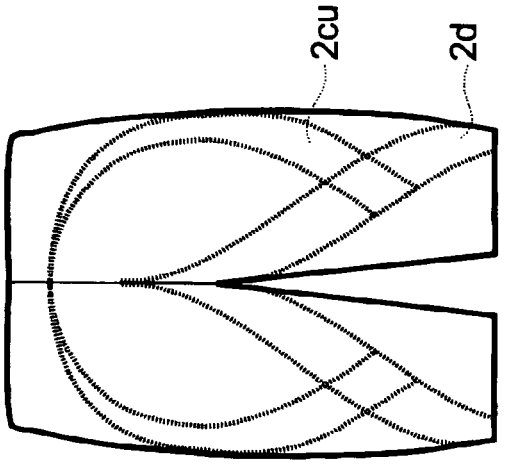


Fig.19A

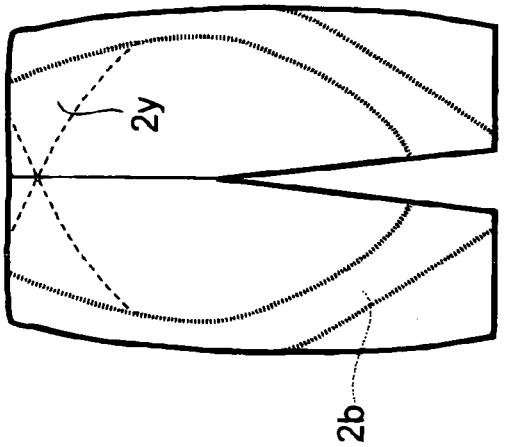


Fig.20B

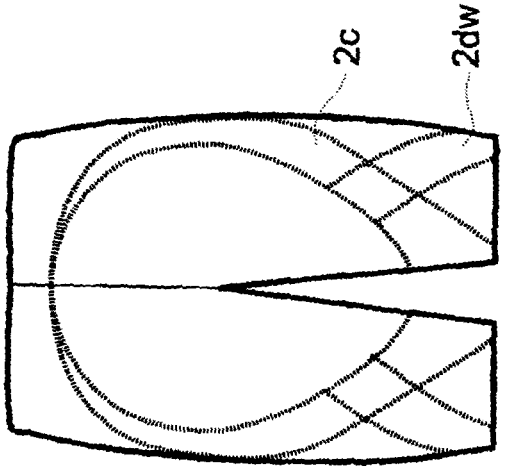


Fig.20A

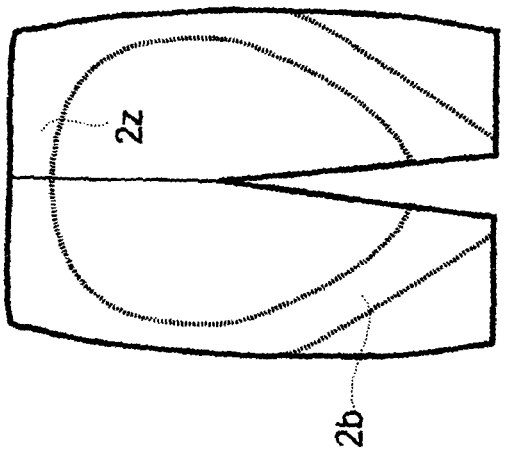


Fig.21B

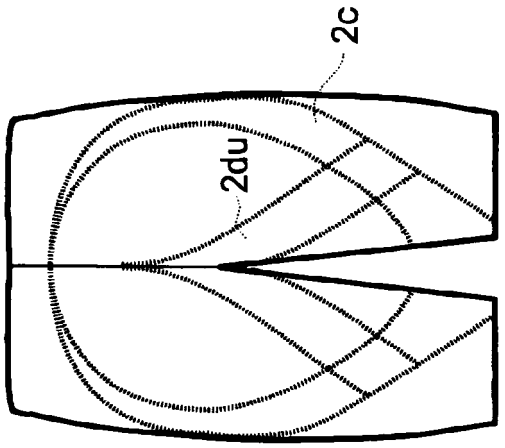
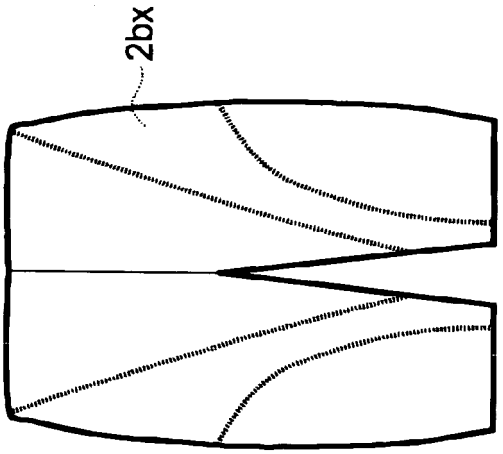


Fig.21A



INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2004/005325

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl[7] A41D13/00

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)
Int.Cl[7] A41D13/00

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	1996-2004
Kokai Jitsuyo Shinan Koho	1971-2004	Toroku Jitsuyo Shinan Koho	1994-2004

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.
Y	JP 2001-192903 A (Wacoal Corp.), 17 July, 2001 (17.07.01), Figs. 5 to 39 & WO 02/047501 A1 & EP 1342423 A & AU 1736201 A & US 2003-0028952 A1	1-29
Y	JP 10-280209 A (Wacoal Corp.), 20 October, 1998 (20.10.98), Figs. 24 to 35 & WO 98/043504 A1 & EP 1016351 A & AU 7872998 A & US 6186970 B1 & CN 1232369 A & TW 388700 B	1-29

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

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"&" document member of the same patent family

Date of the actual completion of the international search 21 July, 2004 (21.07.04)	Date of mailing of the international search report 10 August, 2004 (10.08.04)
Name and mailing address of the ISA/ Japanese Patent Office Facsimile No.	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2004/005325

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 9-241906 A (On'yone Kabushiki Kaisha), 16 September, 1997 (16.09.97), Par. Nos. [0021] to [0025] & WO 98/03546 A1 & EP 1014906 A (Family: none)	16-29
Y	JP 2002-212810 A (Kabushiki Kaisha Descente), 31 July, 2002 (31.07.02), Par. Nos. [0020], [0026], [0032], [0056]; Fig. 11 (Family: none)	1-29
A	JP 11-12814 A (Kabushiki Kaisha Descente), 19 January, 1999 (19.01.99), (Family: none)	16-20
A	JP 2002-212814 A (Combi Corp.), 30 July, 2002 (30.07.02), (Family: none)	1-29

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