



(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
18.04.2018 Bulletin 2018/16

(51) Int Cl.:
A43B 9/02 (2006.01)

(21) Application number: **16811477.5**

(86) International application number:
PCT/JP2016/066676

(22) Date of filing: **03.06.2016**

(87) International publication number:
WO 2016/204002 (22.12.2016 Gazette 2016/51)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD

(72) Inventors:
• **YUMIBA, Isao**
Wakayama-shi
Wakayama 641-8511 (JP)
• **SHIMASAKI, Yoshinori**
Wakayama-shi
Wakayama 641-8511 (JP)

(30) Priority: **15.06.2015 JP 2015119997**

(74) Representative: **Emde, Eric**
Wagner & Geyer
Gewürzmühlstrasse 5
80538 München (DE)

(71) Applicant: **Shima Seiki Mfg., Ltd.**
Wakayama-shi, Wakayama 641-8511 (JP)

(54) **SHOE UPPER AND METHOD FOR MANUFACTURING SHOE UPPER**

(57) Provided is a shoe upper for which a sewing operation is easy and that is superior in productivity. A shoe upper (1) includes a heel knitted fabric (10) that is formed in a shape such that it wraps around a portion ranging from the Achilles tendon to the heel of a wearer, and a body knitted fabric (11) that constitutes the portion of the shoe upper (1) other than the heel knitted fabric (10). The shoe upper (1) further includes a toe side joint portion (13) that retains a shape of a front end portion of the body knitted fabric (11) such that it wraps around the toes of the wearer. A first line (L1) obtained by bringing a left edge portion (11a) and a right edge portion (11b), in the knitting width direction, of the body knitted fabric (11) into butting contact with each other, and a second line (L2) obtained by folding a set up portion (10s) of the heel knitted fabric (10) into two portions so that the two portions butt against each other are in one straight line. The first line and the second line are formed at positions on the sole cover (2).

Fig. 1A

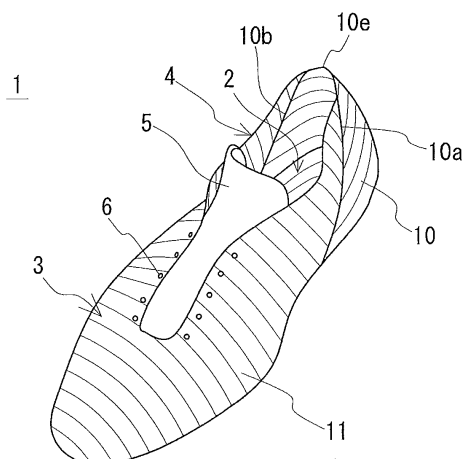
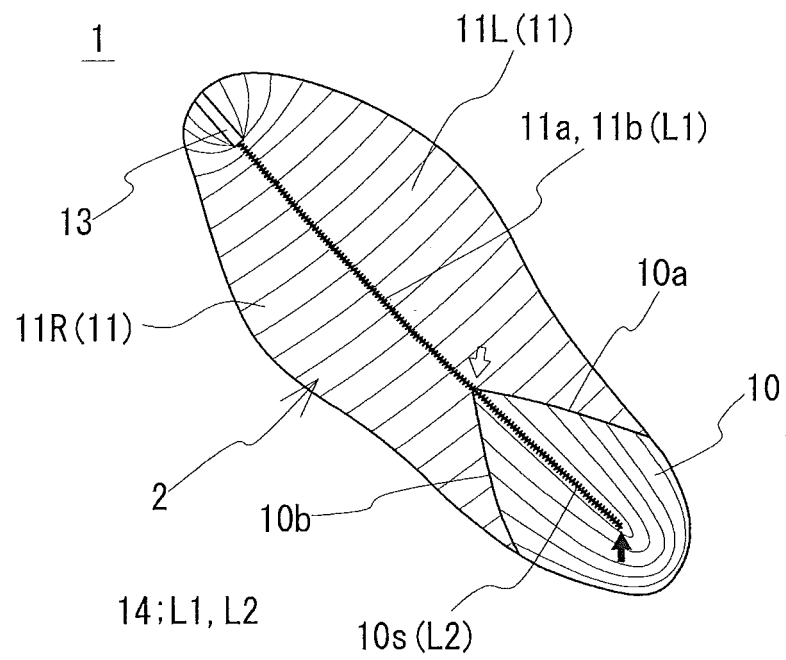


Fig. 1B



Description**TECHNICAL FIELD**

[0001] The present invention relates to a shoe upper constituted by a knitted fabric, and a method for manufacturing the shoe upper.

BACKGROUND ART

[0002] Shoes include a shoe upper with a sole cover that covers the sole of a wearer, and an instep cover that covers a portion on the instep side of the wearer. For outdoor shoes, an outer sole made of a synthetic resin or the like is attached to the sole cover of the shoe upper. In recent years, an attempt has been made to manufacture a shoe upper that is lightweight and superior in foot comfort by configuring the shoe upper mostly of a knitted fabric.

[0003] For example, Patent Document 1 attempted to configure an instep cover that is part of a shoe upper with one sheet of knitted fabric to manufacture a shoe with good productivity. When the instep cover of Patent Document 1 is used to manufacture a shoe upper, the instep cover is joined by sewing to a separately prepared sole cover to complete the shoe upper.

RELATED ART DOCUMENT**PATENT DOCUMENT**

[0004] Patent Document 1: WO 2015/037540A

DISCLOSURE OF THE INVENTION**PROMELS TO BE SOLVED BY THE INVENTION**

[0005] In recent years, there is a demand for further improving the productivity of shoe uppers. If, to meet such a demand, an instep cover knitted with the technique of Patent Document 1 is used to manufacture a shoe upper, then there is the problem that an operation of sewing the instep cover and a sole cover is somewhat troublesome. This is because, since the instep cover and the sole cover are separate members, positioning of sewing positions is required and furthermore the sewing is performed along a curved line. Because such sewing along a curved line requires some degree of technique, and working hours vary depending on the skill of the sewing operator, this sometimes lowers the productivity of shoe uppers.

[0006] The present invention was made in view of the above-described circumstances, and it is an object of the present invention to provide a shoe upper for which a sewing operation is easy and that is superior in productivity, and a method for manufacturing the same.

MEANS OF SOLVING THE PROBLEMS

[0007] An aspect of the present invention relates to a shoe upper made of a knitted fabric with a sole cover configured to cover an entire sole portion of a wearer, and an instep cover configured to cover a portion on an instep side of the wearer, forming a foot insertion opening, the shoe upper including:

- 10 - a heel knitted fabric that is knitted so that its set up portion is wider than its knitting end portion, the heel knitted fabric being formed in a shape such that it wraps around a portion ranging from an Achilles tendon to a heel of the wearer by the set up portion being arranged on a sole cover side in a state in which it is folded into two portions at a center in a knitting width direction of the set up portion so that the two portions butt against each other, and the knitting end portion constituting a part, on a heel side, of the foot insertion opening;
- 15 - a body knitted fabric that is knitted to follow a left edge portion and a right edge portion, in the knitting width direction, of the heel knitted fabric, and constitutes a portion of the shoe upper other than the heel knitted fabric; and
- 20 - a toe side joint portion that is formed by bringing edge portions on a terminal side in a wale direction of the body knitted fabric close to a center, in the knitting width direction, of the body knitted fabric and joining the edge portions to each other, and retains a shape of a front end portion of the body knitted fabric such that it wraps around toes of the wearer.
- 25
- 30

[0008] In the shoe upper having the above-described configuration, a first line obtained by bringing a left edge portion and a right edge portion, in the knitting width direction, of the body knitted fabric into butting contact with each other, and a second line obtained by folding the set up portion of the heel knitted fabric into two portions so that the two portions butt against each other are in one straight line, the first line and the second line being formed at positions on the sole cover.

[0009] As one aspect of the present invention, the shoe upper may include a sewn portion in which the first line and the second line are sewn.

[0010] An aspect of the present invention relates to a shoe upper manufacturing method of knitting a shoe upper with a sole cover configured to cover a sole portion of a wearer, and an instep cover configured to cover a portion on an instep side of the wearer, forming a foot insertion opening, using a flat knitting machine provided with at least a pair of a front and a back needle bed. The shoe upper includes : a heel knitted fabric that has a dimension from a heel-side portion of the foot insertion opening to a heel-side portion of the sole cover, and is configured to wrap around a portion ranging from an Achilles tendon to the heel of the wearer; and a body knitted fabric that is a portion other than the heel knitted

fabric, and the method includes :

a step α of knitting the heel knitted fabric whose set up portion is wider than its knitting end portion;
 a step β of starting knitting a left portion of the body knitted fabric that follows a left edge portion, in a knitting width direction, of the heel knitted fabric, and starting knitting a right portion of the body knitted fabric that follows a right edge portion, in the knitting width direction, of the heel knitted fabric;
 a step γ of knitting the left portion and the right portion in a state in which they are lined up side by side on the needle beds, and forming a tapered toe side of the body knitted fabric; and

a step δ of joining a left curved edge portion formed on the toe side of the left portion and a right curved edge portion formed on the toe side of the right portion sequentially from a boundary between the left and right curved edge portions.

In the step γ , a knitting width of the left portion and a knitting width of the right portion are adjusted so that a left edge portion in the knitting width direction of the left portion and a right edge portion in the knitting width direction of the right portion are in a straight line when, after knitting the shoe upper is complete, the heel knitted fabric is folded into two portions at the center in its knitting width direction, and the left portion and the right portion of the body knitted fabric are laid on each other in a thickness direction. Here, in at least part of the steps α to γ , it is preferable to knit a knitting pattern using the front and back needle beds.

[0011] As one aspect of the shoe upper manufacturing method of the present invention, in the step α , after the set up portion of the heel knitted fabric is knitted, inside widening may be performed at at least two positions with a central portion in the knitting width direction interposed therebetween to increase a knitting width of the heel knitted fabric.

[0012] As one aspect of the shoe upper manufacturing method of the present invention, the step 5 is followed by the following step ε :

- the step δ of joining by sewing a first line obtained by bringing a left edge portion and a right edge portion, in the knitting width direction, of the body knitted fabric into butting contact with each other, and a second line obtained by folding the set up portion of the heel knitted fabric into two portions so that the two portions butt against each other.

EFFECTS OF THE INVENTION

[0013] In the shoe upper of the present invention, the first line and the second line for joining by sewing the left and right knitted fabrics at positions on the sole cover extend in one straight line. Straight sewing can be per-

formed easily, and in the shoe upper of the present invention, sewing for forming the shoe upper in a three-dimensional shape does not need to be performed in a portion other than the straight first line and second line. Accordingly, the shoe upper of the present invention can be manufactured with good productivity.

[0014] According to the shoe upper manufacturing method of the present invention, it is possible to knit a shoe upper in which the sewing position for forming the shoe upper in a three-dimensional shape is straight. Moreover, since there is one sewing position for forming the knitted shoe upper in a three-dimensional shape, it is possible to improve the productivity of the shoe upper.

[0015] By performing inside widening in the step α of knitting the heel knitted fabric, it is possible to knit the heel knitted fabric in a three-dimensional shape. As a result, the shape of the heel knitted fabric of the shoe upper can conform to the shape of the heel of wearers.

[0016] By performing the step ε of joining by sewing the first line and the second line, it is possible to manufacture a shoe upper with a three-dimensional shape. Since the first line and the second line are formed in a straight line, a sewing operation can be executed easily.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017]

FIG. 1A is a schematic perspective view illustrating a shoe upper according to Embodiment 1 when seen obliquely from above.

FIG. 1B is a schematic bottom view illustrating the shoe upper.

FIG. 2A is a schematic left-side view illustrating the shoe upper.

FIG. 2B is a schematic right-side view illustrating the shoe upper.

FIG. 3 is a schematic view illustrating an example of a procedure for knitting the shoe upper according to Embodiment 1.

MODE FOR CARRYING OUT THE INVENTION

[0018] Hereinafter, embodiments of the shoe upper of the present invention and the method for manufacturing the same will be described with reference to the drawings.

<Embodiment 1>

<<Overall Configuration>>

[0019] Embodiment 1 will describe an example of manufacturing a shoe upper 1 shown in FIGS. 1A, 1B, 2A, and 2B. The shoe upper 1 is a knitted fabric knitted using, at least partially, a knitting yarn that includes heat-fusible yarn, and the shoe upper 1 is provided with a sole cover 2 that covers the sole portion of a wearer, and an instep cover 3 that covers a portion on the instep side of the

wearer, forming a foot insertion opening 4. An outer sole (not shown) made of resin or the like may be attached to the outer side of the sole cover 2 of the shoe upper 1. Note here that, for convenience of description, FIGS. 2A and 2B show the sole cover 2 so that it can be seen from the side, but in reality, the sole cover 2 can hardly be seen from the side.

[0020] The foot insertion opening 4 of the shoe upper 1 of the present example extends toward the toe side in a slit shape, and a tongue 5 is formed at a cut end of the slit. Furthermore, eyelets 6 through which a shoelace is passed are formed at positions on the instep cover 3 that are located on both sides of the slit. The tongue 5 and the eyelets 6 are configurations provided as an option.

[0021] The shoe upper 1 having the above-described configuration is a knitted fabric that is knitted using a flat knitting machine, and has a three-dimensional shape that conforms to the shape of the foot of wearers. Particularly, the heel-side portion and the toe side portion of the shoe upper 1 have a three-dimensional shape that conforms to the shape of the foot. The shoe upper 1 has a three-dimensional shape because, as shown in the later-described shoe upper manufacturing method, the shoe upper 1 is divided into a heel knitted fabric 10 and a body knitted fabric 11, and the heel knitted fabric 10 is knitted and then the body knitted fabric 11 is knitted. In FIGS. 1A, 1B, 2A, and 2B, fine lines denote knitting width directions (directions in which stitches are lined up in the longitudinal direction of the needle beds during knitting) of the heel knitted fabric 10 and the body knitted fabric 11. In other words, the directions orthogonal to the fine lines are wale directions. Note here that the tongue 5 is also a knitted fabric, but its knitting width direction is omitted in FIGS. 1A, 1B, 2A, and 2B.

<<Heel Knitted Fabric>>

[0022] The heel knitted fabric 10 is a knitted fabric that covers a portion ranging from the Achilles tendon to the heel of the wearer. A set up portion 10s of the heel knitted fabric 10 is arranged on the sole cover 2 side in a state in which the set up portion 10s is folded into two portions at the center in its knitting width direction (see FIG. 1B) so that the two portions butt against each other. More specifically, the central portion (see the bold arrow) of the set up portion 10s at which it was folded into two portions is arranged on the heel side, and both end portions (see the white arrow) are arranged on the toe side. A line (second line L2) obtained by folding the set up portion 10s into two portions so that the two portions butt against each other extends straight toward the toe. On the other hand, a knitting end portion 10e of the heel knitted fabric 10 constitutes a part, on the heel side, of the foot insertion opening 4 that is formed on the upper side of the instep cover 3 (see FIG. 1A).

[0023] The heel knitted fabric 10 is knitted in a substantially trapezoidal shape such that its set up portion 10s is wider than the knitting end portion 10e. Accord-

ingly, on the instep cover 3 side shown in FIG. 1A, a left edge portion 10a and a right edge portion 10b, which extend from the vicinity of the foot arch at the boundaries between the sole cover 2 and the instep cover 3 to the foot insertion opening 4, are both inclined toward the heel side. Furthermore, on the sole cover 2 side shown in FIG. 1B, the left edge portion 10a (right edge portion 10b) extending leftward (rightward) from the central portion of the sole cover 2 is inclined toward the heel side. Here, the heel knitted fabric 10 may be formed in a substantially triangular shape. Also in this case, both edge portions 10a and 10b are inclined toward the heel side.

<Body Knitted Fabric>>

[0024] The body knitted fabric 11 is knitted to follow the left edge portion 10a and the right edge portion 10b of the heel knitted fabric 10, and a state is realized in which, at respective positions on these edge portions 10a and 10b, end stitches in the knitting width direction of the heel knitted fabric 10 and end stitches in the wale direction of the body knitted fabric 11 are connected to each other. As a result, the heel knitted fabric 10 and the body knitted fabric 11 are supported with respect to each other, and the heel-side portion of the shoe upper 1 is retained in a three-dimensional shape.

[0025] A left portion 11L of the body knitted fabric 11 that follows the left edge portion 10a of the heel knitted fabric 10, and a right portion 11R of the body knitted fabric 11 that follows the right edge portion 10b of the heel knitted fabric 10 are, as shown in FIG. 1A, seamlessly contiguous to each other at the position on the instep cover 3 side that is near the toe. The portion in which the left portion 11L and the right portion 11R are not contiguous to each other forms, together with the knitting end portion 10e of the heel knitted fabric 10, the foot insertion opening 4. On the other hand, on the sole cover 2 side, a connection portion (toe side joint portion 13) is formed in which the toe side portions of the left portion 11L and the right portion 11R are joined by knitting to each other, and the connection portions (later-described first line L1) other than this toe side joint portion 13 are connected to each other by sewing rather than knitting.

[0026] The toe side joint portion 13 is formed by bringing edge portions on a terminal side in the wale direction of the body knitted fabric 11 close to the center in the knitting width direction of the body knitted fabric 11 and joining the edge portions to each other. More specifically, by joining the edge portion on the terminal side in the wale direction of the left portion 11L of the body knitted fabric 11 to the edge portion on the terminal side in the wale direction of the right portion 11R of the body knitted fabric 11 sequentially from the toe side, the toe side joint portion 13 is formed. With this toe side joint portion 13, the front end portion of the body knitted fabric 11 is retained in a shape such that it wraps around the toes of wearers.

[0027] As a result of the toe side joint portion 13 being

formed, a left edge portion 11a and a right edge portion 11b, in the knitting width direction, of the body knitted fabric 11 are rotated toward the sole cover 2 side, and are butting against each other. The first line L1 obtained by bringing the left edge portion 11a and the right edge portion 11b into butting contact with each other extends straight, and is sewn in one straight line together with the above-described second line L2, which is obtained by folding the set up portion 10s of the heel knitted fabric 10 into two portions so that the two portions butt against each other. In other words, the shoe upper 1 of the present example is provided with a sewn portion 14 in which the left and right knitted fabrics are connected by sewing to each other at a position on the sole cover 2.

«Knitting pattern of Instep Cover»

[0028] At least a part of the shoe upper 1 (the heel knitted fabric 10 and the body knitted fabric 11), namely, the entire shoe upper 1 in the present embodiment is made with a thick knitting pattern knitted using front and back needle beds. The method for knitting a thick knitting pattern is not particularly limited. For example, knitting methods using front and back needle beds, such as rib knitting and tubular knitting, can be used in a suitable combination to knit a thick knitting pattern. Such a knitting pattern is thicker and tougher than a knitting pattern (for example, a plain pattern) knitted only using either of front and back needle beds. If a shoe upper 1 of a shoe to which a load is applied in use is made with a thick knitting pattern, then it is possible to realize a shoe upper 1 that is less likely to deform and is superior in durability. Here, the front and back needle beds can be used to knit a thick knitting pattern because, as shown in a knitting step that will be described later with reference to FIG. 3, the left portion 11L and the right portion 11R are knitted while being lined up in the longitudinal direction of the needle beds.

<<Shoe Upper Manufacturing Method>>

[0029] The above-described shoe upper 1 can be manufactured through the knitting step of knitting the heel knitted fabric 10 and the body knitted fabric 11, a sewing step of sewing the first line L1 and the second line L2 that are arranged on the sole cover 2 side, and a heat treatment step of subjecting the shoe upper 1 to a heat treatment.

<Knitting Step>

[0030] In the knitting step, a two-bed flat knitting machine with at least a pair of a front and a back needle bed is used to knit the heel knitted fabric 10, and then knit the body knitted fabric 11. Of course, the knitted fabrics 10 and 11 can also be knitted using a four-bed flat knitting machine.

[0031] The description of the knitting step will be given

with reference to FIG. 3. FIG. 3 is a schematic view illustrating a knitting procedure of a knitting method. In FIG. 3, white arrows denote the direction in which knitting advances (the same as the wale direction), and horizontal lines in the portions 10 and 11 denote the knitting width direction (direction in which stitches are lined up). Furthermore, in the drawing, capital letters are added to positions important for knitting.

[0032] First, the heel knitted fabric 10 is knitted (corresponding to a step α). Specifically, the set up portion 10s (see points A to B) of the heel knitted fabric 10 is knitted, and a plurality of stitch rows are knitted to follow the set up portion 10s in the wale direction. During the knitting, the knitting width of the stitch rows is reduced gradually. The resultant stitches that are lined up in the left edge portion 10a (see points A to C) in the knitting width direction of the heel knitted fabric 10, and the resultant stitches that are lined up in the right edge portion 10b (see points B to D) are held on the needle beds. On the other hand, the knitting end portion 10e (see points C to D), which serves as the terminal portion in the wale direction of the heel knitted fabric 10, is shorter than the set up portion 10s. The knitting end portion 10e is to be removed from the needle beds using a binding off treatment or the like.

[0033] Here, when knitting the heel knitted fabric 10, it is also possible to perform inside widening at at least two positions with the central portion in the knitting width direction of the heel knitted fabric 10 interposed therebetween. For example, inside widening is performed at two positions near the center in the knitting width direction, and at two positions located outward, in the knitting width direction, of the two positions, these positions being denoted in the drawing by chain double-dashed lines. "Inside widening" refers to a knitting operation of forming a widening stitch within the knitting width of a knitted fabric, and a well-known inside widening operation for forming, for example, a split stitch or a pick up stitch is available. Performing inside widening during knitting the heel knitted fabric 10 makes the heel knitted fabric 10 swollen, and enables the shape of the heel knitted fabric 10 to conform better to the shape of the foot.

[0034] After the step α , knitting the left portion 11L of the body knitted fabric 11 that follows the left edge portion 10a of the heel knitted fabric 10 is started from the point C, and knitting the right portion 11R of the body knitted fabric 11 that follows the right edge portion 10b, in the knitting width direction, of the heel knitted fabric 10 is started from the point D (corresponding to a step β). The left portion 11L and the right portion 11R are knitted using different yarn feeders.

[0035] After the step β , the left portion 11L and the right portion 11R of the body portion 11 are knitted in a state in which they are lined up side by side on the needle beds, so that the toe side of the body portion 11 is tapered (step γ). When knitting the body portion 11, the knitting width of the left portion 11L and the knitting width of the right portion 11R are adjusted so that the left edge portion 11a in the knitting width direction of the left portion 11L,

and the right edge portion 11b in the knitting width direction of the right portion 11R are in a straight line when, after knitting the shoe upper 1 is complete, the heel knitted fabric 10 is folded into two portions at the center in its knitting width direction, and the left portion 11L and the right portion 11R of the body knitted fabric 11 are laid on each other in the thickness direction (see FIGS. 2A and 2B). For the adjustment of the knitting widths thereof, the width and height of the shoe upper 1 are also taken into consideration. The left portion 11L and the right portion 11R need not be symmetrical, but the left portion 11L and the right portion 11R preferably have different knitting widths to conform to the shape of the foot. Note here that the first line L1, which is obtained by bringing the left portion 11L and the right portion 11R into butting contact with each other, may be shifted to the left or right from the center of the sole cover 2 as long as the first line L1 is straight.

[0036] In the step γ of the present example, the tongue 5 and the eyelets 6 are also formed. Knitting the tongue 5 is started between the left portion 11L and the right portion 11R (see points G to H), and when it is knitted in a certain length, then the tongue 5 is connected to the body portion 11. Furthermore, the eyelets 6 can be formed by narrowing or the like.

[0037] The body portion 11 that is knitted in the step γ is knitted so as to be tapered toward the toe, as described above. Specifically, the body portion 11 is tapered by gradually reducing the knitting width of the body portion 11 using flechage knitting or the like. As a result of such knitting being performed, a left curved edge portion 11c (see points I to K) that is formed on the toe side of the left portion 11L and a right curved edge portion 11d (see points J to K) that is formed on the toe side of the right portion 11R are held on the needle beds.

[0038] Furthermore, when knitting the body knitted fabric 11, it is also possible to perform knitting such that the knitting width of the body knitted fabric 11 is once reduced and then increased, so that the toe side portion has a three-dimensional shape. For example, the knitting width of the body knitted fabric 11 is reduced so that stitches at the end portions in the knitting width direction are lined up on the line connecting points a and b, which is denoted by chain double-dashed line, and the knitting width of the body knitted fabric 11 is increased so that the line connecting the points a and b are connected to the line connecting points c and b. As a result of such knitting being performed, the toe side portion of the body knitted fabric 11 takes on such a shape that it is curled toward the far side in the drawing, and the sewing operation to be performed later is facilitated.

[0039] After the step γ , the left curved edge portion 11c, which is formed on the toe side of the left portion 11L, and the right curved edge portion 11d, which is formed on the toe side of the right portion 11R, are joined to each other sequentially from the boundary between the two edge portions 11c and 11d (corresponding to a step δ). By performing the step δ , it is possible to form the toe

side joint portion 13 shown in FIGS. 1A, 1B, 2A, and 2B, and form the toe portion of the shoe upper 1 in a three-dimensional shape.

[0040] The method for joining the two curved edge portions 11c and 11d is not particularly limited. Examples thereof can include a method for joining the two curved edge portions 11c and 11d by knitting a knitted fabric for connecting the two curved edge portions 11c and 11d, and a method for directly joining by knitting stitches of the two curved edge portions 11c and 11d. In the former case, first, all stitches except for the stitch at the boundary-side end of the left curved edge portion 11c are moved to the boundary side, and all stitches except for the stitch at the boundary-side end of the right curved edge portion 11d are also moved to the boundary side. With the movement, a double stitch obtained by superposing the two stitches at the boundary-side end of the left curved edge portion 11c on each other is formed, and a double stitch obtained by superposing the two stitches at the boundary-side end of the right curved edge portion 11d on each other is formed. Then, two new stitches are respectively knitted to follow the two double stitches in their wale directions. Thereafter, superposing the stitch at the boundary-side end of the left curved edge portion 11c on the one new stitch and superposing the stitch at the boundary-side end of the right curved edge portion 11d on the other new stitch, and forming two new stitches that respectively follow the pair of double stitches are repeated until there is no stitch of the two curved edge portions 11c and 11d. On the other hand, in the latter case, the joining may be performed by directly overlapping the stitch at the boundary-side end of the left curved edge portion 11c and the stitch at the boundary-side end of the right curved edge portion 11d, and forming a new stitch on this double stitch.

[0041] With the above-described steps α to δ , a shoe upper 1 shown in FIGS. 1A, 1B, 2A, and 2B can be knitted in which its heel-side portion and toe-side portion are retained in a three-dimensional shape, and are made with a thick knitting pattern. At this time, the first line L1 and the second line L2 of the shoe upper 1 are not yet joined to each other, and thus the following sewing step is performed.

<Sewing Step>

[0042] In the sewing step (corresponding to a step ε of the present invention), the first line L1, which is obtained by bringing the left edge portion 11a and the right edge portion 11b, in the knitting width direction, of the body knitted fabric 11 into butting contact with each other, and the second line L2, which is obtained by folding the set up portion 10s of the heel knitted fabric 10 into two portions so that the two portions butt against each other, are joined by sewing to each other. As a result, it is possible to complete the shoe upper 1 that includes the straight sewn portion 14 shown in FIG. 1B.

[0043] Here, the first line L1 and the second line L2 to

be sewn are lined up in a straight line as shown in FIGS. 2A and 2B. This is because the knitting widths of the left portion 11L and the right portion 11R of the body portion 11 have been adjusted to obtain such a state. Since straight sewing can be performed easily without requiring a special skill of the sewing operator, the shoe upper 1 of the present example is superior in productivity. Furthermore, in the shoe upper 1 of the present example, sewing for forming the shoe upper 1 in a three-dimensional shape does not need to be performed in the portion other than the sewn portion 14, and thus the shoe upper 1 of the present example is superior in productivity also in this respect.

[0044] A reinforcement member or a decorative member may also be attached to the shoe upper 1 using sewing. Just to be on the safe side, sewing a reinforcement member or a decorative member is different from the sewing for forming the shoe upper 1 in a three-dimensional shape.

<Heat Treatment Step>

[0045] The shoe upper 1 on which the sewing was performed is preferably fit into a shoe last, and is subjected to a heat treatment. By melting, in the heat treatment, the heat-fusible yarn of the knitting yarn used to knit the shoe upper 1, it is possible to obtain a shoe upper 1 with a three-dimensional shape. Furthermore, the shoe upper 1 is tough and has appropriate flexibility since stitches are fused due to the heat-fusible yarn.

<Other Steps>

[0046] Since the shoe upper 1 subjected to the heat treatment is constituted with a thick knitting pattern and the sole cover 2 is already integrated, the shoe upper 1 can be used as is. Of course, a decorative member, a reinforcement member, an inner sole, an outer sole, or the like may also be attached to the shoe upper 1. The shoe upper 1 of the present example has a three-dimensional shape conforming to the shape of the foot, and thus an inner sole, an outer sole, or the like can be attached easily.

DESCRIPTION OF REFERENCE NUMERALS

[0047]

- | | | |
|-----|------------------------|--|
| 1 | Shoe upper | |
| 2 | Sole cover | |
| 3 | Instep cover | |
| 4 | Foot insertion opening | |
| 5 | Tongue | |
| 6 | Eyelet | |
| 10 | Heel knitted fabric | |
| 10s | Set up portion | |
| 10e | Knitting end portion | |
| 10a | Left edge portion | |

- | | |
|-------|---------------------------|
| 10b | Right edge portion |
| 11 | Body knitted fabric |
| 11L | Left portion |
| 11R | Right portion |
| 5 11a | Left edge portion |
| 11b | Right edge portion |
| 11c | Left curved edge portion |
| 11d | Right curved edge portion |
| 13 | Toe side joint portion |
| 10 14 | Sewn portion |
| L1 | First line |
| L2 | Second line |

15 Claims

1. A shoe upper made of a knitted fabric with a sole cover configured to cover an entire sole portion of a wearer, and an instep cover configured to cover a portion on an instep side of the wearer, forming a foot insertion opening, the shoe upper comprising:

a heel knitted fabric that is knitted so that its set up portion is wider than its knitting end portion, the heel knitted fabric being formed in a shape such that it wraps around a portion ranging from an Achilles tendon to a heel of the wearer by the set up portion being arranged on a sole cover side in a state in which it is folded into two portions at a center in a knitting width direction of the set up portion so that the two portions butt against each other, and the knitting end portion constituting a part, on a heel side, of the foot insertion opening;

a body knitted fabric that is knitted to follow a left edge portion and a right edge portion, in the knitting width direction, of the heel knitted fabric, and constitutes a portion of the shoe upper other than the heel knitted fabric; and

a toe side joint portion that is formed by bringing edge portions on a terminal side in a wale direction of the body knitted fabric close to a center, in the knitting width direction, of the body knitted fabric and joining the edge portions to each other, and retains a shape of a front end portion of the body knitted fabric such that it wraps around toes of the wearer,

wherein a first line obtained by bringing a left edge portion and a right edge portion, in the knitting width direction, of the body knitted fabric into butting contact with each other, and a second line obtained by folding the set up portion of the heel knitted fabric into two portions so that the two portions butt against each other are in one straight line, the first line and the second line being formed at positions on the sole cover.

2. The shoe upper according to claim 1, comprising:

a sewn portion in which the first line and the second line are sewn.

3. A shoe upper manufacturing method of knitting a shoe upper with a sole cover configured to cover a sole portion of a wearer, and an instep cover configured to cover a portion on an instep side of the wearer, forming a foot insertion opening, using a flat knitting machine provided with at least a pair of a front and a back needle bed, the shoe upper including: a heel knitted fabric that has a dimension from a heel-side portion of the foot insertion opening to a heel-side portion of the sole cover, and is configured to wrap around a portion ranging from an Achilles tendon to a heel of the wearer; and a body knitted fabric that is a portion other than the heel knitted fabric, the method comprising:

a step α of knitting the heel knitted fabric whose set up portion is wider than its knitting end portion;

a step β of starting knitting a left portion of the body knitted fabric that follows a left edge portion, in a knitting width direction, of the heel knitted fabric, and starting knitting a right portion of the body knitted fabric that follows a right edge portion, in the knitting width direction, of the heel knitted fabric;

a step γ of knitting the left portion and the right portion in a state in which they are lined up side by side on the needle beds, and forming a tapered toe side of the body knitted fabric; and

a step δ of joining a left curved edge portion formed on the toe side of the left portion and a right curved edge portion formed on the toe side of the right portion sequentially from a boundary between the left and right curved edge portions, wherein in the step γ , a knitting width of the left portion and a knitting width of the right portion are adjusted so that a left edge portion in the knitting width direction of the left portion and a right edge portion in the knitting width direction of the right portion are in a straight line when, after knitting the shoe upper is complete, the heel knitted fabric is folded into two portions at a center in its knitting width direction, and the left portion and the right portion of the body knitted fabric are laid on each other in a thickness direction.

4. The shoe upper manufacturing method according to claim 3, wherein in the step α , after the set up portion of the heel knitted fabric is knitted, inside widening is performed at at least two positions with a central portion in the knitting width direction interposed therebetween to increase a knitting width of the heel knitted fabric.

5. The shoe upper manufacturing method according to claim 3 or 4,

wherein the step δ is followed by a step ε of joining by sewing a first line obtained by bringing a left edge portion and a right edge portion, in the knitting width direction, of the body knitted fabric into butting contact with each other, and a second line obtained by folding the set up portion of the heel knitted fabric into two portions so that the two portions butt against each other.

Fig. 1A

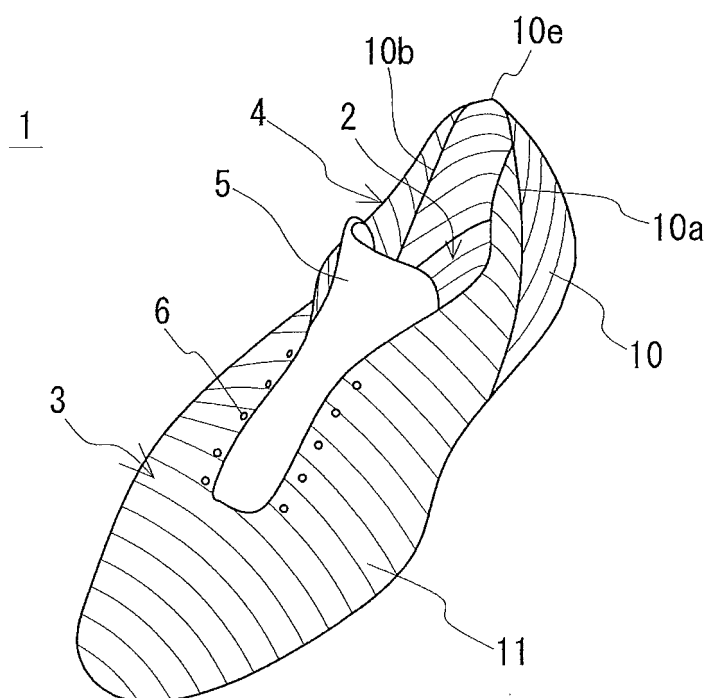


Fig. 1B

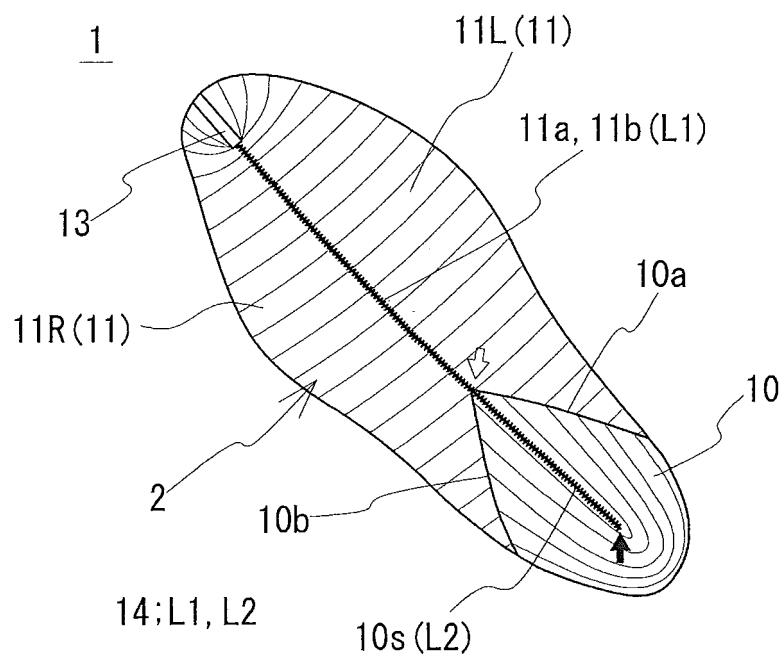


Fig. 2A

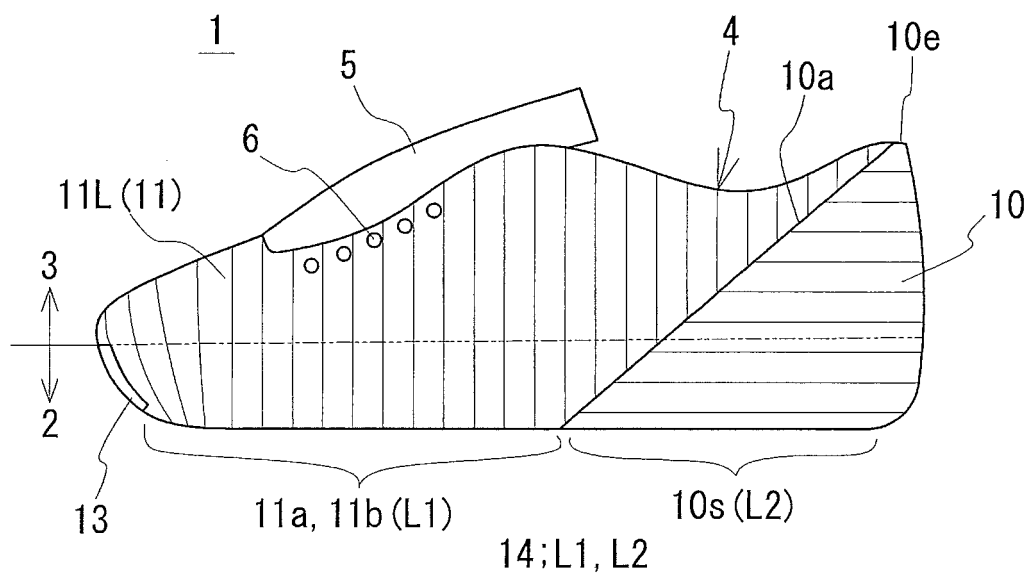


Fig. 2B

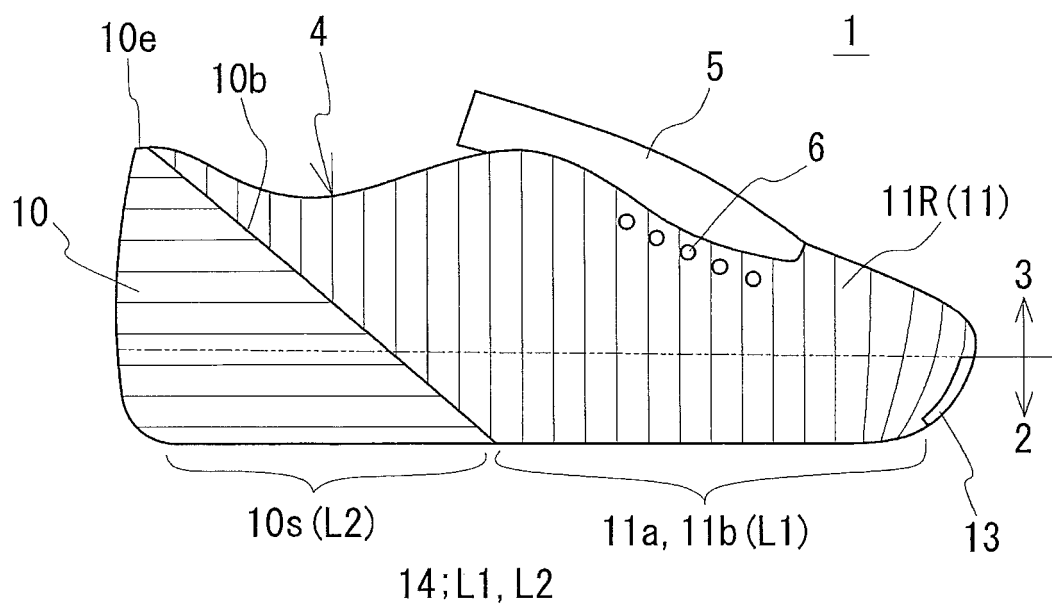
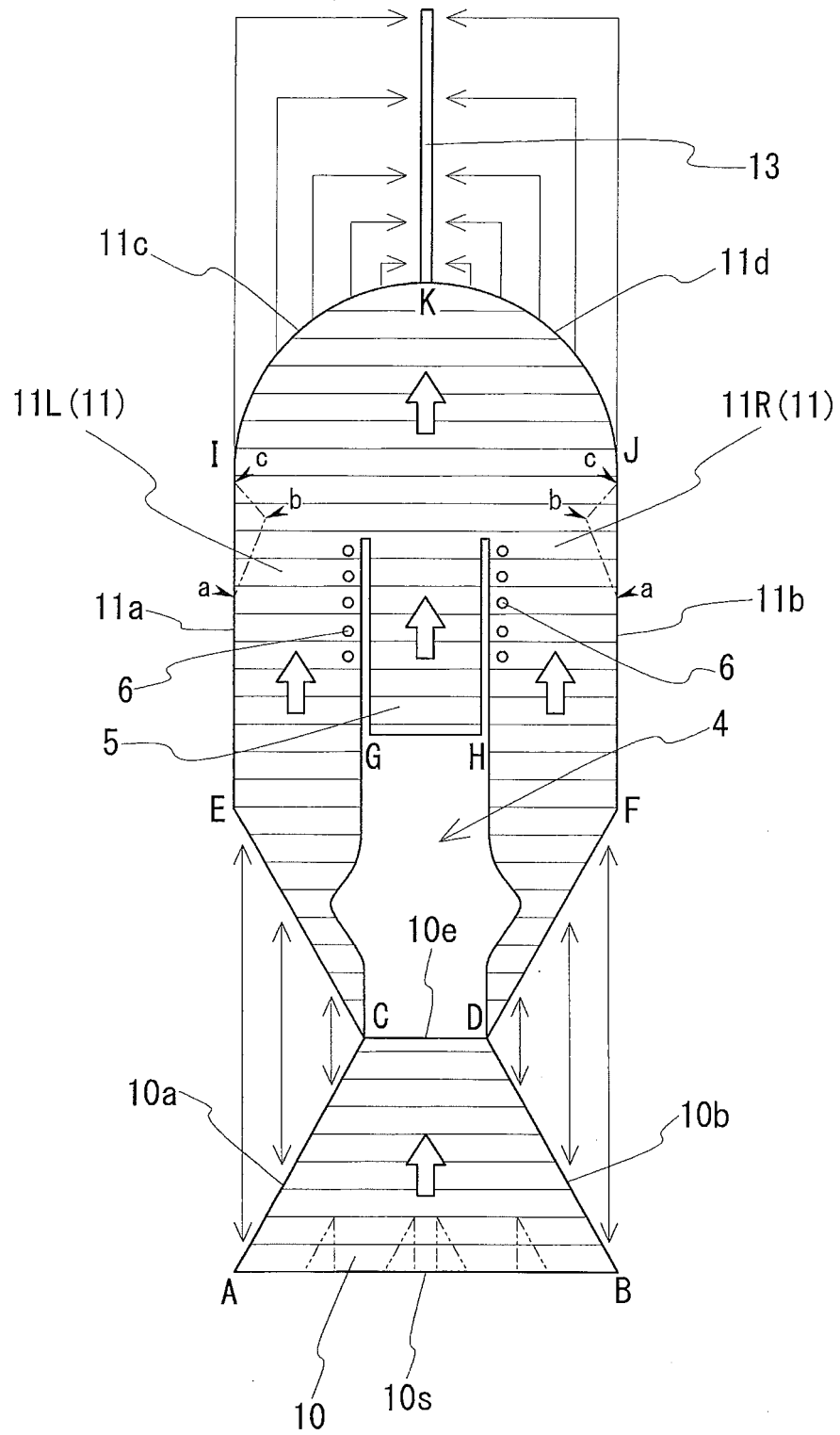


Fig. 3



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2016/066676

A. CLASSIFICATION OF SUBJECT MATTER
A43B9/02 (2006.01) i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A43B9/02

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 1996-2016
Kokai Jitsuyo Shinan Koho 1971-2016 Toroku Jitsuyo Shinan Koho 1994-2016

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.
A	JP 2000-83707 A (Mizuno Inc.), 28 March 2000 (28.03.2000), entire text; all drawings (Family: none)	1-5
A	WO 2015/037540 A1 (Shima Seiki Mfg., Ltd.), 19 March 2015 (19.03.2015), entire text; all drawings & EP 3045067 A & CN 105636470 A & TW 201524395 A & KR 10-2016-0055249 A	1-5

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

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search
10 August 2016 (10.08.16)

Date of mailing of the international search report
23 August 2016 (23.08.16)

Name and mailing address of the ISA/
Japan Patent Office
3-4-3, Kasumigaseki, Chiyoda-ku,
Tokyo 100-8915, Japan

Authorized officer

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 2015037540 A [0004]