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

(11) **EP 2 748 360 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
09.08.2017 Bulletin 2017/32

(21) Application number: **12761714.0**

(22) Date of filing: **30.08.2012**

(51) Int Cl.:
D04B 1/24 *(2006.01)* ***D04B 1/10*** *(2006.01)*

(86) International application number:
PCT/EP2012/066828

(87) International publication number:
WO 2013/030257 (07.03.2013 Gazette 2013/10)

(54) **KNITWEAR ITEM, OR A PORTION THEREOF, AND RELATED FABRICATION METHOD**

GESTRICK ODER GESTRICKTEIL SOWIE ENTSPRECHENDES STRICKVERFAHREN

VÊTEMENT TRICOTÉ OU PARTIE DE CELUI-CI ET PROCÉDÉ DE FABRICATION CORRESPONDANT

(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

(30) Priority: **02.09.2011 IT TV20110120**

(43) Date of publication of application:
02.07.2014 Bulletin 2014/27

(73) Proprietor: **BENETTON GROUP S.r.l.**
31050 Ponzano Veneto (TV) (IT)

(72) Inventors:
- **BENETTON, Luciano**
  I-31050 Ponzano Veneto (TV) (IT)
- **BENETTON, Giuliana**
  I-31050 Ponzano Veneto (TV) (IT)

(74) Representative: **De Bortoli, Eros et al**
Zanoli & Giavarini S.p.A.
Via Melchiorre Gioia, 64
20125 Milano (IT)

(56) References cited:
DE-A1- 2 410 368
US-A- 3 389 580
US-A- 5 692 399

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 2 748 360 B1

Description

[0001] The present invention relates to a knitwear item, or a portion thereof, and to a method of fabricating it at industrial level.

[0002] As it is known, current fashion trends require knitwear items to have exceptional fit, i.e. high capacity to adapt to the shape of the user's body.

[0003] In many cases, knitwear garments currently available on the market do not yet offer a satisfactory level of fit, above all with regard to the upper portion of the user's bust.

[0004] Some garments, after being put one, have creases or smears at the breast point and/or underarm region, with considerable reduction of their aesthetic value.

[0005] In other models, the knitted fabric is often subject to undesirable stretching at the breast point, due to the structural tensions to which the knitted fabric is subjected with use. Naturally, these deformations cause aesthetic deterioration of the knitwear garment, often until its replacement becomes necessary.

[0006] Other knitwear garments available on the market are shaped in such a manner as to adhere to the user's body but are not very comfortable to wear and somewhat unsuitable for larger physiques, above all as regards the bust and the breasts.

[0007] In the clothing sector, in particular that of clothing intended for a female public, there is still a great need to provide knitwear garments that are able to draw attention to and/or enhance the curves of the body, in particular of the upper portion of the bust and of the breasts, at the same time offering the user a high level of comfort.

[0008] Patent documents DE2410368A1 and US3389580 describe known methods for manufacturing knitwear items.

[0009] More specifically, DE 2410368 A1 discloses a knitwear item and a method of making same according to the preamble of independent claims 1 and 6. The present invention intends to meet the needs indicated above by providing a knitwear item, or a portion thereof, according to claim 1 and the related dependent claims, set forth below.

[0010] In a general definition thereof, the knitwear item, or a portion thereof, according to the invention, comprises a pectoral region, configured to be worn at the user's chest, in which there are defined a central zone and two side zones that are substantially symmetric with respect to said central zone.

[0011] Each of the aforesaid side zones comprises a lower portion and an upper portion, having knitted fabric with modified interlacing with respect to the rest of the item, or a portion thereof. According to the invention, the knitted fabric of the lower portion of each of said side zones comprises a plurality of stitches that are doubled and set in adjacent position at a series of rows in the direction toward said upper portion, so as to obtain a widening of the same knitted fabric.

[0012] According to the invention, the knitted fabric of the upper portion of each of said side zones comprises a plurality of stitches set overlapped at a series of rows, in the distal direction from said lower portion, so as to obtain a narrowing of the same knitted fabric.

[0013] In a further aspect thereof, the present invention relates to a method of fabricating, at industrial level, the aforesaid knitwear item, or a portion thereof, according to claim 6 and the related dependent claims, set forth below.

[0014] The method, according to the invention, provides for the use of a two needle bed knitting apparatus, preferably rectilinear, comprising a first needle bed and a second needle bed for fabricating the knitted fabric.

[0015] The method, according to the invention, comprises the steps of fabricating, for each of the side zones of the pectoral region of the knitwear item, a lower portion and an upper portion, having knitted fabric with modified interlacing with respect to the rest of the item, or a portion thereof.

[0016] According to the invention, the knitted fabric of the lower portion of each of said side zones comprises a plurality of stitches that are doubled and set in adjacent position at a series of rows in the direction toward said upper portion, so as to obtain a widening of the knitted fabric.

[0017] According to the invention, the knitted fabric of the upper portion of each of said side zones comprises a plurality of stitches set overlapped at a series of rows, in the distal direction from said lower portion, so as to obtain a narrowing of the knitted fabric.

[0018] Further characteristics and advantages will be more apparent from the description of preferred but non-exclusive embodiments of the present invention, illustrated by way of non-limiting example with the aid of the accompanying drawings, wherein:

- Fig. 1 is a schematic representation of an embodiment of the knitwear item, or a portion thereof, according to the invention;
- Fig. 2 is a further schematic representation of an embodiment of the knitwear item, or a portion thereof, according to the invention;
- Fig. 3 is a schematic representation of the knitted fabric at a side zone of the pectoral region of the knitwear item, or a portion thereof, according to the invention;
- Fig. 4 is a schematic representation of the knitted fabric at a lower portion of a side zone of the pectoral region of the knitwear item, or a portion thereof, according to the invention;
- Fig. 5 is a schematic representation of the knitted fabric at an upper portion of a side zone of the pectoral region of the knitwear item, or a portion thereof, according to the invention;
- Figs. 6-9 are schematic representations of some steps of a method for fabricating the knitwear item, or a portion thereof, according to the invention.

[0019] With reference to the aforesaid figures, the present invention relates to a knitwear item 1, or a portion thereof.

[0020] The knitwear item 1, the type and style of which can be any, according to needs, comprises a pectoral region 2 configured to be worn at the user's chest.

[0021] The pectoral region 2 comprises a central zone 21, substantially positioned at the user's breastbone, and two side zones 22, 23, arranged substantially symmetric with respect to the central zone 21 and positioned at the user's breasts. The side zones 22 and 23 each comprise a lower portion 221, 231 and an upper portion 222, 232.

[0022] For the sake of clarity, some terms that will be used hereunder for the description of the present invention are set down briefly below:

direction of development of the knitwear item: this term is intended as a reference direction oriented from the lower portion to the upper portion of the user's bust (direction S1 in Figs. 1-2);

stitch: this term is intended as a length of yarn, in general folded in the form of a loop about a needle of a knitting apparatus, during fabrication of the knitted fabric. The interlacing of several stitches causes the formation of the knitted fabric;

row: this term is intended as a horizontal series of stitches of the knitted fabric. In other words, it is intended as a series of stitches that extends in a manner substantially crosswise with respect to the direction S1;

column: this term is intended as a vertical series of stitches of the knitted fabric, In other words, it is intended as a series of stitches that extends substantially along the direction S1;

needle bed: this term is intended as an element to support and guide the needles in a knitting apparatus;

needle position: the position occupied by a stitch at a needle bed;

widening direction of the knitted fabric: this term is intended as a direction along which the stitches of the rows are translated to widen the knitted fabric (direction D1 in Figs. 3-9). In the fabrication of the lower portion 231, the widening direction D1 is oriented from left to right (Figs. 3-9). In the fabrication of the lower portion 221, the widening direction D1 will be oriented in the opposite direction, from right to left;

narrowing direction of the knitted fabric: this term is intended as the direction along which the stitches of the rows are translated to narrow the knitted fabric (direction D2 in Figs. 3-9). In the fabrication of the upper portion 232, the narrowing direction D2 is oriented from right to left (Figs. 3-9). In the fabrication of the upper portion 222, the narrowing direction is oriented in the opposite direction, from left to right.

[0023] Preferably, the side zones 21 and 22 of the pectoral region 2 also comprise a mid portion 223, 233, positioned substantially at the user's breast point, represented schematically by the axis 200 of Fig. 2.

[0024] Preferably, the lower 221, 231 and upper 222, 232 portions of each side zone 22, 23 are positioned symmetrically with respect to the mid portions 223, 233, according to the direction S 1.

[0025] Given that the mid portion 223, 233 is positioned at the zone of maximum depth of the user's chest, the knitted fabric thereof advantageously comprises a series of rows RC with width corresponding to the width of the last row RL of the knitted fabric of the lower portion 221, 231 (Fig. 3).

[0026] The number of rows RC, overlapped according to a distal direction from lower portion 221, 231 (coincident with the direction S1), can vary, according to needs.

[0027] The lower 221, 231 and upper 222, 232 portions of each side zone 22, 23 are characterised by the fact that is has a knitted fabric with modified interlacing with respect to the rest of the knitwear item 1, in particular to the central zone 21 of the pectoral region 2 or other regions of the knitwear item 1 (Fig. 3).

[0028] According to the invention (Fig. 4), the knitted fabric of the lower portion 221, 231 comprises a plurality of stitches A1, Y, X1, Y1 that are doubled and set in adjacent position at a series of rows R1, R2, R1', R2' in the direction of the upper portion 222, 232 (also coincident with the direction S1).

[0029] The formation of stitches that are doubled and set in adjacent position determines a widening of the knitted fabric, at the points in which interlacing of the knitted fabric is modified to obtain the same doubled stitches.

[0030] In other words, interlacing of the knitted fabric of the lower portion 221, 231 is advantageously modified so that new columns of stitches originate from the points in which formation of the doubled stitches occurs to be developed in the subsequent rows, overlapped according to the direction S 1.

[0031] Insertion of a new column of stitches determines setting (translation) of the columns of subsequent stitches, according to the direction D1.

[0032] From the above, it is evident that widening of the knitted fabric can be performed at points distant from the side edges of the lower portion 221, 231.

[0033] It should be noted how this distinctive characteristic constitutes an evident differentiation with respect to knitwear items of known type, in which widening of the knitted fabric is typically performed at the ends of the rows, simply by means of adding stitches.

[0034] The positioning of points in which to modify the interlacing of the knitted fabric to obtain the doubled stitches can be chosen according to needs.

[0035] Given that the points, in which interlacing of the knitted fabric is modified, are generally visible also to an observer not skilled in the art, their positioning can be selected to design decorative patterns on the knitted fabric, for example of rectilinear type, as shown in Figs. 1-2, or shaped to draw attention to the outline of the user's

breasts.

[0036] Preferably, the knitted fabric of the lower portion 221, 231 is fabricated according to predefined sequences of rows, repeated according to the direction S1.

[0037] In a preferred embodiment of the present invention, the knitted fabric of the lower portion 221, 231 comprises one or more pairs T1, T2 of rows overlapped according to the direction S1 (Fig.4).

[0038] In each of the pairs of rows T1, T2, a first row R1, R1' comprises a first pair of stitches (A1, Y in the row R1) that are doubled and set in adjacent position, according to the direction D1.

[0039] Each of the pairs of rows T1, T2 also comprises a second row R2, R2' overlapped with row R1, R1' in the direction S1 and comprising a second pair of stitches (X1, Y1 in the row R2) that are doubled and set in adjacent position, according to the direction D1. Preferably, the knitted fabric of the lower portion 221, 231 comprises a first pair T1 of rows, a second pair T2 of rows and one or more mid rows RI between the first pair T1 and the second pair T2, overlapped according to the direction S1.

[0040] The mid rows RI have a width corresponding to the second row R2 of the first pair T1 and their number can vary according to needs.

[0041] In alternative embodiments of the present invention (not illustrated), one or more third rows can be inserted between the rows R1, R1' and R2, R2'. Each of the aforesaid third rows preferably has a width corresponding to that of the row R1, R1'.

[0042] According to the invention, the knitted fabric of the upper portion 222, 232 comprises a plurality of stitches A2, B, B1, C set overlapped at a series of rows R4 in the direction S1 (Fig. 5).

[0043] The overlapping of several stitches in the rows R4 determines a reduction of the extension thereof and therefore a narrowing of the knitted fabric.

[0044] Interlacing of the knitted fabric of the upper portion 222, 232 is in practice modified so as to eliminate columns of stitches at points in which the stitches are set overlapped. Elimination of a column of stitches determines setting (translation) of the preceding columns of stitches, according to the direction D2.

[0045] Narrowing of the knitted fabric can thus be obtained at points of the knitted fabric that are distant from the side edges of the upper portion 222, 232.

[0046] Also this distinctive characteristic constitutes an evident differentiation with respect to knitwear items of known type, in which narrowing of the knitted fabric is performed typically by means of elimination of stitches at the ends of the rows.

[0047] Positioning of the points in which to modify interlacing of the knitted fabric of the upper portion 222, 232 can be chosen according to needs.

[0048] Given that the points in which the interlacing of the knitted fabric is modified are generally visible, positioning thereof can be selected to design decorative patterns on the knitted fabric, according to needs.

[0049] Preferably, the knitted fabric of the upper portion 222, 232 is fabricated according to predefined sequences of rows.

[0050] In a preferred embodiment, the knitted fabric of the upper portion 222, 232 comprises at least one sequence of rows constituted by a fourth row R4, comprising two third pairs A2, B and B1, C of stitches set overlapped, and one or more fifth rows R5 in the direction S1, with width corresponding to the width of the fourth row R4.

[0051] Several sequences comprising the rows R4, R5 can advantageously be overlapped, in the direction S1, according to needs. Each of these sequences can have a different number of rows R5, according to needs.

[0052] In a further aspect thereof, the present invention relates to a method of fabricating, at industrial level, the knitwear item, or a part thereof.

[0053] The method, according to the invention, provides for the use of a two needle bed knitting apparatus, preferably of rectilinear type.

[0054] The aforesaid knitting apparatus comprises a first needle bed F1 and a second needle bed F2.

[0055] Preferably, the knitted fabric is knitted with a plain knitting process. In this case, the first needle bed F1 and the second needle bed F2 correspond respectively to the front and rear needle bed of the knitting apparatus.

[0056] The knitted fabric could also be knitted with a purl knitting process. In this case, the first needle bed F1 and the second needle bed F2 correspond respectively to the rear and front needle bed of the knitting apparatus.

[0057] Preferably, the needles of the needle beds F1 and F2 are needles of the latch or compound type and are operatively positioned so as to form pairs of opposite needles capable of cooperating with each other to braid the yarn and manipulate the stitches of the knitted fabric.

[0058] The method, according to the invention, comprises the steps 101 and 102 of fabricating, for each of said side zones 22, 23, the lower portion 221, 231 and the upper portion 222, 232, which are realized as described above.

[0059] Preferably, the method, according to the invention, also comprises a step (not illustrated) of fabricating, for each of the side zones 22, 23, the mid portion 223, 233.

[0060] As illustrated above, the knitted fabric of the mid portion 223, 233 advantageously comprises a series of consecutive rows RC, overlapped in the direction S1, with width corresponding to the width of the last row (RL in Fig. 3) of the knitted fabric of the lower portion 221, 231.

[0061] The steps 101 and 102 of fabricating the lower 221, 231 and upper 222, 232 portions of the method, according to the invention, will now be described in greater detail.

[0062] In the following description, specific reference will be made to fabricating the lower portion 231 and the upper portion 232 of the side zone 23 (Figs. 6-9).

[0063] Analogous considerations are valid for fabricating the lower portion 221 and the upper portion 222 of the side zone 22, taking account of the opposite orienta-

tions of the directions D1/D2 of widening/narrowing of the knitted fabric.

[0064] The portions 221, 231 and 222, 232 are advantageously fabricated simultaneously by the knitting apparatus, according to the method that will be described, during fabrication of the knitwear item 1.

[0065] According to a preferred embodiment of the present invention (Fig. 6), the step 101 of fabricating the lower portion 221, 231 comprises the step i) of fabricating a first row R1 having a plurality of N stitches that occupy respective needle positions at the first needle bed F1.

[0066] Initially, the needles of the needle bed F1 are occupied by the stitches of the row R1 while the needles of the needle bed F2 are free.

[0067] The step 101 provides for the step ii) of selecting a first stitch A in the row R1, which occupies, at the first needle bed F1, a first reference needle position P1;

[0068] The row R1, just as the first stitch A, and the related needle position P1 of this latter, can be selected according to the fabrication needs of the knitwear item 1.

[0069] The step 101 also provides for the step iii) of selecting second stitches Z in the row R1, which occupy, at the needle bed F1, the adjacent needle positions P_Z that follow the first needle position P1, according to the direction D1 (to the right).

[0070] The step 101 then provides for the step iv) of performing the doubling of the stitch A in a first doubled stitch A1 and in a second doubled stitch Y.

[0071] The doubled stitch A1 is positioned so as to occupy the needle position P1 at the needle bed F1 while the doubled stitch Y is moved in the needle bed F2, so as to occupy the same needle position P1.

[0072] The step 101 provides for the step v) of moving the second stitches Z in the needle bed F2. The stitches Z are positioned so as to occupy, at the needle bed F2, the adjacent positions P_Z that follow the needle position P1, according to the direction D1.

[0073] In practice, the stitches Z are moved so as to occupy, in the needle bed F2, the same needle positions that they occupied at the needle bed F1.

[0074] In this manner, all the stitches of the row R1, positioned downstream (i.e. to the right) of the reference needle position P1, are moved from the needle bed F1 to the needle bed F2, according to the direction D1.

[0075] The step 101 provides for the step vi) of moving in the needle bed F1 the doubled stitch Y and the subsequent stitches Z, by performing a first translation K1 of one needle position, according to the direction D1 (to the right).

[0076] The stitches Y and Z, thus moved, are positioned in the needle bed F1 so as to occupy the adjacent needle positions P_Z that follow the needle position P1, in the direction D1.

[0077] The stitch Y will occupy the needle position immediately to the right of the needle position P1 while the stitches Z will be positioned so as to be decreased to the right of a needle position, with respect to the start of the sequence of steps i)-vi).

[0078] It should be noted that, after the completion of the step vi), the row R1 comprises N+1 stitches given that, at the needle position P_Z immediately following the needle position P1, according to the direction D1, the doubled stitch Y has been inserted.

[0079] The steps i)-vi), described above, therefore enable a widening of the knitted fabric of the lower portion 231, at the needle position P1 of the row R1.

[0080] As illustrated above, the knitted fabric of the lower portion 231 preferably comprises pairs T1, T2 of rows, at of each of which consecutive rows R1 and R2 comprise pairs of stitches that are doubled and set in adjacent positions.

[0081] Preferably (Fig. 7), the step 101 comprises the step vii) of fabricating, according to the direction S1, a second row R2 which has the same width as the row R1, after the completion of the steps i)-vi) of the step 101.

[0082] Therefore, the row R2 initially comprises a plurality of N+1 stitches that occupy respective needle positions at the needle bed F1.

[0083] The needles of the needle bed F1 are therefore occupied by the stitches of the row R2 while the needles of the needle bed F2 are free.

[0084] The step 101 provides for the step viii) of selecting a third stitch X in the row R2, which occupies, at the needle bed F1, a second reference needle position P2.

[0085] The needle position P2 can also be selected according to the fabrication needs of the knitwear item 1.

[0086] Preferably, the needle position P2 is selected so that the relation P2=P1+3 is valid, taking as reference the direction D1.

[0087] The step 101 provides for the step ix) of selecting fourth stitches Z1 in the row R2.

[0088] The stitches Z1 occupy, at the needle bed F1, the adjacent needle positions P_{Z1} that follow the needle position P2, in the direction D1.

[0089] The step 101 provides for the step x) of performing the doubling of the stitch X in a third doubled stitch X1 and in a fourth doubled stitch Y1.

[0090] The doubled stitch X1 is positioned so as to occupy the needle position P2, at the needle bed F1 while the doubled stitch Y1 is moved in the needle bed F2 so as to occupy the same needle position P2.

[0091] The step 101 then comprises the step xi) of moving the fourth stitches Z1 in the needle bed F2, so as to occupy, at this latter, the adjacent needle positions P_{Z1} that follow the needle position P2, in the direction D1.

[0092] In this way, all the stitches of the row R2, positioned downstream (i.e. to the right) of the needle position P2, are moved from the needle bed F1 to the needle bed F2, according to the direction D1.

[0093] The step 101 then comprises the step xii) of moving, in the needle bed F1, the fourth doubled stitch Y1 and the fourth stitches Z1, by performing a second translation K2 of one needle position in direction D1 (to the right).

[0094] The stitches Y1 and Z1 are thus positioned so

as to occupy, at the needle bed F1, the adjacent needle positions P_{Z1} that follow the needle position P2, according to the direction D1.

[0095] The stitch Y1 will occupy the needle position immediately to the right of the needle position P2 while the stitches Z1 will be decreased to the right of a needle position, with respect to the start of the sequence of steps vii)-xii).

[0096] The steps vii)-xii), described above, enable a further widening of the knitted fabric of the lower portion 231, at the reference needle position P2 of the row R2.

[0097] After the completion of the step xii), in fact, the row R2 comprises N+2 stitches, as the doubled stitch Y1 has been inserted, at the needle position P_{Z1} immediately following the needle position P2, according to the direction D1.

[0098] It should be noted that each sequence of steps i)-xii) enables the fabrication of a pair T1, T2 of rows comprising stitches that are doubled and set in adjacent positions.

[0099] In order to alternate the pairs of rows T1 and T2, the step 101 preferably provides for the step xiii) (not illustrated) of fabricating one or more mid rows RI, according to the direction S1 (figure 4).

[0100] The mid rows RI has a width corresponding to the width (N+2 stitches) of the row R2, after the completion of the preceding steps vii)-xii).

[0101] The number of the mid rows RI can vary according to the fabrication needs of the knitwear item 1.

[0102] The cycle of steps i)-xiii) of the step 101, described above, can advantageously be repeated one or more times, until the completion of the lower portion 231.

[0103] At each cycle, a widening of 2 stitches of the knitted fabric will advantageously be obtained.

[0104] At each cycle, moreover, new reference positions P1 and P2, at which to modify interlacing of the knitted fabric of the lower portion 231, can be taken into consideration.

[0105] The selection of new reference positions P1 and P2 can be made, for example, as a function of the type of decorative pattern to be fabricated in the lower portion 231.

[0106] Finally, it should be noted that in the step 101 the translations K1 and K2, sustained by the stitches of the knitted fabric, are preferably of one needle position, according to the direction D1 (to the right).

[0107] The steps i)-xiii), illustrated above, can be performed in a different order to that indicated. Some steps can also be performed simultaneously, i.e. with a same operation of the needles of the knitting apparatus, according to needs.

[0108] According to a preferred embodiment of the present invention (Figs. 8-9), the step 102 of fabricating the upper portion 232 comprises the step i) of fabricating a fourth row R4 having a plurality of M stitches that occupy corresponding needle positions at the needle bed F1.

[0109] Initially, the needles of the needle bed F1 are occupied by the stitches of the row R4 while the needles of the needle bed F2 are free.

[0110] The step 102 then provides for the following steps II)-V), respectively of:

- selecting a fifth stitch A2 in the row R4, said fifth stitch occupying, at the needle bed F1, a third reference needle position P3;
- selecting a sixth stitch B1 in the row R4, said sixth stitch occupying, at the first needle bed F1, a fourth reference needle position P4 that precedes the reference needle position P3, according to the direction D2;
- selecting seventh stitches B in the row R4, said seventh stitches occupying, at the needle bed F1, the adjacent needle positions PB comprised between the needle positions P3 and P4;
- selecting eighth stitches C in the row R4, said eighth stitches occupying, at the needle bed F1, the adjacent needle positions PC that precede the needle position P3, according to the direction D2.

[0111] The reference positions P3 and P4 can be selected according to the fabrication needs of the knitwear item 1.

[0112] Preferably, the reference needle position P4 is selected so that the relation P4=P3-3 is valid, taking as reference the direction D2.

[0113] The step 102 comprises the step VI) of moving in the needle bed F2 the stitches A2, B1 and B. These stitches are positioned so as to occupy, at the needle bed F2, respectively the needle position P3, the needle position P4 and the adjacent needle positions P_B comprised between the needle positions P3 and P4.

[0114] The step 102 comprises the step VII) of moving in the needle bed F1 the stitches B and B1, performing a third translation K3 of one needle position in the direction D2 (to the left).

[0115] Consequently, the stitches B and B1 occupy, at the needle bed F1, the needle position P3 and the adjacent needle positions P_B that precede it, according to the direction D2.

[0116] A stitch B will occupy the needle position P3 while the stitch B1, which previously occupied the needle position P4, occupies, following the aforesaid translation K3, a fifth reference needle position P5, at the needle bed F1.

[0117] The fifth reference needle position P5 immediately follows the reference needle position P4, according to the relation P5=P4+1, taking as reference the direction D2.

[0118] It should be noted that after the completion of the step VII), the needle positions of the needle bed F1 are not all occupied.

[0119] In fact, the needle position P4 remains free due to the translation K3 of the stitches B and B1, according to the direction D2.

[0120] The step 102 comprises the step VIII) of once again moving the stitch B1 so that it occupies the needle

position P5, at the needle bed F2.

[0121] The step 102 comprises the step IX) of moving the stitches C in the needle bed F2.

[0122] The stitches C are positioned so as to occupy, in the needle bed F2, the same adjacent needle positions P_C that precede the needle position P4, according to the direction D2.

[0123] In this way, all the stitches of the row R4, positioned upstream (i.e. to the right) of the reference needle position P4, are moved from the needle bed F1 to the needle bed F2, according to the direction D2.

[0124] The step 102 comprises the step X) of moving the stitches C in the needle bed F1, performing a fourth translation K4 of two needle positions, in the direction D2.

[0125] The stitches C are thus positioned so as to occupy, at the needle bed F1, the needle position P5 and the adjacent needle positions that precede it, according to the direction D2, including the needle position P4.

[0126] The step 102 then provides for the step XI) of moving in the needle bed F1 the stitch A2, so that this latter is positioned overlapped with the stitch B that occupies the reference needle position P3, at the needle bed F1.

[0127] Finally, the step 102 also provides for the step XII) of moving in the needle bed F1 the stitch B1, so that this latter is positioned overlapped with the stitch C that occupies the reference needle position P5, at the needle bed F1.

[0128] The steps I)-XII), described above, enable narrowing of the knitted fabric of the upper portion 222, 232, at the points P3 and P5 of the row R4.

[0129] After the completion of the steps I)-XII), in fact, the row R4 comprises M-2 stitches, positioned at the needle bed F1.

[0130] To alternate the rows R4, at which to modify interlacing of the knitted fabric, the step 101 preferably provides for the step XIII), not illustrated, of fabricating one or more fifth rows R5, according to the direction S1 (figure 5).

[0131] The rows R5 have a width corresponding to the width (M-2 stitches) of the row R4, after the completion of the previous steps I)-XII), and their number can vary, according to the fabrication needs of the knitwear item 1.

[0132] The cycle of steps I)-XIII) of the step 102, described above, can advantageously be repeated one or more times, until the completion of the upper portion 232.

[0133] At each cycle, a narrowing of two stitches of the knitted fabric will advantageously be obtained.

[0134] Moreover, at each cycle, new reference positions P3, P4 and P5 at which to modify interlacing of the knitted fabric, can be taken into consideration.

[0135] The selection of the new reference positions P3, P4 and P5, can be made, for example, as a function of the type of decorative pattern to be fabricated in the upper portion 232.

[0136] It should be noted, in this case, that in the step 102 the translations K3 and K4, sustained by the stitches of the knitted fabric, differ from each other, one needle position for the translation K3, two needle positions for the translation K4, according to the direction D2 (to the left).

[0137] The steps I)-XIII), illustrated above, can be performed in different order to that indicated. Some steps can also be performed simultaneously, according to needs.

[0138] It has been seen how in practice the knitwear item 1, or a portion thereof, according to the invention, enables the set task and objects to be achieved.

[0139] The knitwear item 1 has, at specific portions of the pectoral region 2, a knitted fabric with modified interlacing so as to better adapt to variations in the depth of the user's bust, typical of the pectoral region.

[0140] The knitwear item 1 thus ensures a high level of fit at the pectoral region, while simultaneously being very comfortable for the user.

[0141] The knitwear item 1 can be fabricated by means of a fabrication method easily implemented at industrial level, by means of knitting apparatus of known type.

[0142] The knitwear item 1 is therefore easy to fabricate at industrial level, at competitive costs.

Claims

1. A knitwear item (1), or a portion thereof, comprising a pectoral region (2) configured to be worn at the user's chest, said pectoral region comprising a central zone (21) and two side zones (22, 23) that are substantially symmetric with respect to said central zone, each of said side zones comprising a lower portion (221, 231) and an upper portion (222, 232) having a knitted fabric with modified interlacing with respect to the rest of the knitwear item, **characterised in that**:

   - the knitted fabric of said lower portion comprises a plurality of stitches (A1, Y, X1, Y1) that are doubled and set in adjacent position at a series of rows (R1, R2, R1', R2'), in the direction (S1) toward said upper portion, so as to obtain a widening of the knitted fabric;
   - the knitted fabric of said upper portion comprises a plurality of stitches (A2, B, B1, C) set overlapped at a series of rows (R4), in the distal direction (S1) from said lower portion, so as to obtain a narrowing of the knitted fabric.

2. A knitwear item, or a portion thereof, according to claim 1, **characterised in that** each of said side zones comprises a mid-portion (223, 233), positioned between said lower portion and said upper portion, the knitted fabric of said mid portion comprising a series of rows (RC), in the distal direction (S1) from said lower portion, with a width corresponding to the width of the last row (RL) of the knitted fabric of said lower portion.

3. A knitwear item, or a portion thereof, according to one or more of the previous claims, **characterised in that** the knitted fabric of said lower portion (221, 231) comprises at least a couple (T1, T2) of rows formed by:

- a first row (R1, R1') comprising a plurality of stitches (A1, Y) that are doubled and set in adjacent position;
- a second row (R2, R2'), overlapped with said first row in the direction (S1) of said upper portion and comprising a plurality of stitches (X1, Y1) that are doubled and set in adjacent position.

4. A knitwear item, or a portion thereof, according to claim 3, **characterised in that** the knitted fabric of said lower portion comprises a sequence of rows formed by:

- a first couple (T1) of rows comprising said first and second row (R1, R2);
- a second couple (T2) of rows comprising said first and second row (R1', R2');
- a series of mid rows (RI) that separates said first couple (T1) of rows from said second couple (T2) of rows in the direction (S1) of said upper portion, said mid rows (RI) having a width corresponding to the width of the second row (R2) of said first couple (T1) of rows .

5. A knitwear item, or a portion thereof, according to one or more of the previous claims, **characterised in that** the knitted fabric of said upper portion (222, 232) comprises a sequence of rows comprising:

- a fourth row (R4) comprising a plurality of stitches (A2, B, B1, C) set overlapped;
- one or more fifth rows (R5), overlapped with said fourth row in the distal direction (S1) from said lower portion, with a width corresponding to the width of said fourth row.

6. Method for fabricating a knitwear item, or a portion thereof, by means of a two needle bed knitting apparatus, comprising a first needle bed (F1) and a second needle bed (F2), said knitwear item comprising a pectoral region (2) configured to be worn at the user's chest, said pectoral region comprising a central zone (21) and two side zones (22, 23) that are substantially symmetric with respect to said central zone, said method comprising the steps (101, 102) of fabricating, for each of said side zones, a lower portion (221, 231) and an upper portion (222, 232), having a knitted fabric with modified interlacing with respect to the rest of the knitwear item **characterised in that**,

- the knitted fabric of said lower portion comprises a plurality of stitches (A1, Y, X1, Y1) that are doubled and set in adjacent position at a series of rows (R1, R2), in the direction (S1) toward said upper portion, so as to obtain a widening of the knitted fabric;
- the knitted fabric of said upper portion comprises a plurality of stitches (A2, B, B1, C) set overlapped at a series of rows (R4), in the distal direction (S1) from said lower portion, so as to obtain a narrowing of the knitted fabric.

7. Method, according to claim 6, **characterised in that** it comprises the step of fabricating, for each of said side zones (22, 23), a mid portion (223, 233), positioned between said lower portion and said upper portion, the knitted fabric of said mid portion comprising a series of rows (RC), in the distal direction (S1) from said lower portion, with a width corresponding to the width of the last row (RL) of the knitted fabric of said lower portion.

8. Method, according to one or more of the claims from 6 to 7, **characterised in that** the step (101) of fabricating said lower portion (221, 231) comprises the following steps:

i) fabricating a first row (R1) having a plurality of stitches that occupy corresponding needle positions at said first needle bed (F1);
ii) selecting a first stitch (A) in said first row (R1), said first stitch occupying, at said first needle bed (F1), a first reference needle position (P1);
iii) selecting second stitches (Z) in said first row (R1), said second stitches occupying, at said first needle bed (F1), the adjacent needle positions (P_z) that follow said first reference needle position (P1), in the widening direction (D1) of the knitted fabric;
iv) performing the doubling of said first stitch (A) in a first doubled stitch (A1) and in a second doubled stitch (Y), said first doubled stitch (A1) occupying said first reference needle position (P1) at said first needle bed (F1), said second doubled stitch being moved in said second needle bed (F2) so as to occupy said first reference needle position (P1), at said second needle bed (F2);
v) moving said second stitches (Z) in said second needle bed (F2), so as to occupy, at said second needle bed (F2), the adjacent needle positions (P_z) that follow said first reference needle position (P1), in the widening direction (D1) of the knitted fabric;
vi) moving said second doubled stitch (A2) and said second stitches (Z) in said first needle bed (F1), by performing a first translation (K1) of one needle position in the widening direction (D1) of the knitted fabric, so as to occupy, at said first

needle bed (F1), the adjacent needle positions (P_Z) that follow said first reference needle position (P1), in the widening direction (D1) of the knitted fabric.

9. Method, according to claim 8, **characterised in that** the step (101) of fabricating said lower portion (221, 231) comprises the following further steps:

vii) fabricating a second row (R2), overlapped with said first row in the direction (S1) toward said upper portion, said second row having a width corresponding to the width of said first row (R1), after the completion of said steps i)-vi), and comprising a plurality of stitches that occupy corresponding needle positions at said first needle bed (F1);
viii) selecting a third stitch (X) in said second row (R2), said third stitch occupying, at said first needle bed (F1), a second reference needle position (P2);
ix) selecting fourth stitches (Z1) in said second row (R2), said fourth stitches occupying, at said first needle bed (F1), the adjacent needle positions (P_{Z1}) that follow said second reference needle position (P2), in the widening direction (D1) of the knitted fabric;
x) performing the doubling of said third stitch (X) in a third doubled stitch (X1) and in a fourth doubled stitch (Y1), said third doubled stitch (X1) occupying said second reference needle position (P2) at said first needle bed (F1), said fourth doubled stitch (X1) being moved in said second needle bed (F2) so as to occupy said second reference needle position (P2), at said second needle bed (F2);
xi) moving said fourth stitches (Z1) in said second needle bed (F2), so as to occupy at said second needle bed (F2), the adjacent needle positions (P_{Z1}) that follow said second reference needle position (P2), in the widening direction (D1) of the knitted fabric;
xii) moving said fourth doubled stitch (Y1) and said fourth stitches (Z1) in said first needle bed (F1), by performing a second translation (K2) of one needle position in the widening direction (D1) of the knitted fabric, so as to occupy, at said first needle bed (F1), the adjacent needle positions (P_{Z1}) that follow said second reference needle position (P2), in the widening direction (D1) of the knitted fabric.

10. Method, according to claim 9, **characterised in that** the step (101) of fabricating said lower portion (221, 231) comprises the following further step:

xiii) fabricating a set of mid rows (RI), in the direction (S1) of said upper portion, said mid rows (RI) having a width corresponding to the width of said second row (R2), after the completion of said steps vii)-xiii).

11. Method, according to one or more of the claims from 6 to 10, **characterised in that** the step (102) of fabricating said upper portion (222, 232) comprises the following steps:

I) fabricating a fourth row (R4) having a plurality of stitches that occupy corresponding needle positions at said first needle bed (F1);
II) selecting a fifth stitch (A2) in said fourth row (R4), said fifth stitch occupying, at said first needle bed (F1), a third reference needle position (P3);
III) selecting a sixth stitch (B1) in said fourth row (R4), said sixth stitch occupying, at said first needle bed (F1), a fourth reference needle position (P4) that precedes said third reference needle position (P3) in the narrowing direction (D2) of the knitted fabric;
IV) selecting seventh stitches (B) in said fourth row (R4), said seventh stitches occupying, at said first needle bed (F1), the adjacent needle positions (P_B) comprised between said third reference needle position (P3) and said fourth reference needle position (P4);
V) selecting eighth stitches (C) in said fourth row (R4), said eighth stitches occupying, at said first needle bed (F1), the adjacent needle positions (P_c) that precede said fourth reference needle position (P4), in the narrowing direction (D2) of the knitted fabric;
VI) moving said fifth stitch (A2), said sixth stitch (B1) and said seventh stitches (B) in said second needle bed (F2), so as to occupy, at said second needle bed (F2), said third reference needle position (P3), said fourth reference needle position (P4) and the adjacent needle positions (P_B) comprised between said third reference needle position (P3) and said fourth reference needle position (P4), respectively;
VII) moving said seventh stitches (B) and said sixth stitch (B1) in said first needle bed (F1), by performing a third translation (K3) of one needle position in the narrowing direction (D2) of the knitted fabric, so as to occupy, at said first needle bed (F1), said third reference needle position (P3) and the adjacent needle positions (P_B) that precede said third reference needle position, in the narrowing direction (D2) of the knitted fabric, said sixth stitch (B1) occupying, after said third translation, a fifth reference needle position (P5), at said first needle bed (F1);
VIII) moving said sixth stitch (B1) in said second needle bed (F2), so as to occupy said fifth reference needle position (P5) at said second nee-

dle bed (F2);
IX) moving said eighth stitches (C) in said second needle bed (F2), so as to occupy, at said second needle bed (F2), the adjacent needle positions (P_c) that precede said fourth reference needle position (P4), in the narrowing direction (D2) of the knitted fabric;
X) moving said eight stitches (C) in said first needle bed (F1), by performing a fourth translation (K4) of two needle positions in the narrowing direction (D2) of the knitted fabric, so as to occupy, at said first needle bed (F1), said fifth reference needle position (P5) and the adjacent needle positions (P4, P_C) that precede said fifth reference needle position, in the narrowing direction (D2) of the knitted fabric;
XI) moving said fifth stitch (A2) in said first needle bed (F1), so that said fifth stitch is set overlapped with the stitch (B) that occupies said third reference needle position (P3), at said first needle bed (F1);
XII) moving said sixth stitch (B1) in said first needle bed (F1) so that said sixth stitch is set overlapped with the stitch (C) that occupies said fifth reference needle position (P5), at said first needle bed (F1).

12. Method, according to claim 11, **characterised in that** the step (102) of fabricating said upper portion (222, 232) comprises the following further step:

XIII) fabricating one or more fifth rows (R5), overlapped with said fourth row (R4) in the distal direction (S1) from said lower portion, said fifth rows having width corresponding to the width of said fourth row, after the completion of said steps I)-XII).

Patentansprüche

1. Maschenware (1) oder ein Teil davon, mit einem Brustbereich (2), der so konfiguriert ist, dass er an der Brust des Benutzers getragen wird, wobei der Brustbereich eine zentrale Zone (21) und zwei Seitenzonen (22, 23) umfasst, die in Bezug auf die zentrale Zone im Wesentlichen symmetrisch sind, wobei jede der Seitenzonen einen unteren Abschnitt (221, 231) und einen oberen Abschnitt (222, 232), mit einem Gestrick mit modifizierter Verflechtung in Bezug auf den Rest der Maschenware, **dadurch gekennzeichnet dass**:

- das Gestrick des unteren Teils eine Vielzahl von Maschen (A1, Y, X1, Y1) aufweist, die verdoppelt und in einer Serie von Reihen (R1, R2, R1', R2') gelegt sind in der Richtung (S1) des oberen Teils, um so eine Verbreiterung Gestrickes zu erreichen;
- das Gestrick des oberen Teils eine Vielzahl von Maschen (A2, B, B1, C) umfasst, die in einer Serie von Reihen (R4) in der distalen Richtung (S1) von dem unteren Abschnitt überlappend gelegt sind, um so eine Verengung zu des Gestricks zu erreichen.

2. Maschenware oder ein Teil davon nach Anspruch 1, **dadurch gekennzeichnet, dass** jede der Seitenzonen einen mittleren Abschnitt (223, 233) umfasst, der zwischen dem unteren Abschnitt und dem oberen Abschnitt gelegt ist, wobei das Gestrick des mittleren Teils eine Serie von Reihen (RC) in der distalen Richtung (S1) von dem unteren Abschnitt umfasst, mit einer Breite, die der Breite der letzten Reihe (RL) des Gestricks des unteren Teils entspricht.

3. Maschenware oder ein Teil davon nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Gestrick des unteren Teils (221, 231) mindestens ein Paar (T1, T2) von Reihen aufweist, die gebildet werden durch:

- eine erste Reihe (R1, R1') mit einer Vielzahl von Maschen (A1, Y), die verdoppelt und in angrenzender Position gelegt sind;
- eine zweite Reihe (R2, R2'), die mit der ersten Reihe in der Richtung (S1) des oberen Abschnitts überlappt und eine Vielzahl von Maschen (X1, Y1) umfasst, die verdoppelt und in benachbarter Position gelegt sind.

4. Maschenware oder ein Teil davon nach Anspruch 3, **dadurch gekennzeichnet, dass** das gestrickte Gewebe des unteren Teils eine Folge von Reihen umfasst, die umfassen:

- ein erstes Paar (T1) von Reihen, die die erste und die zweite Reihe (R1, R2) umfassen;
- ein zweites Paar (T2) von Reihen, die die erste und die zweite Reihe (R1', R2') umfassen;
- eine Serie von mittleren Zeilen (R1), die das erste Paar (T1) von Zeilen von dem zweiten Paar (T2) von Zeilen in der Richtung (S1) des oberen Abschnitts trennt, wobei die mittleren Zeilen (RI) eine Breite aufweisen, Breite der zweiten Reihe (R2) des ersten Paares (T1) von Reihen.

5. Maschenware oder ein Teil davon nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Gestrick des oberen Teils (222, 232) eine Folge von Reihen umfasst, die umfasst:

- eine vierte Reihe (R4) mit einer Vielzahl von überlappend gelegten Maschen (A2, B, B1, C);

- eine oder mehrere fünfte Reihen (R5), die mit der vierten Reihe in der distalen Richtung (S1) von dem unteren Abschnitt überlappt sind, mit einer Breite, die der Breite der vierten Reihe entspricht.

6. Verfahren zum Herstellen eine Maschenware oder eines Teils davon mittels einer zwei Nadel-Flachstrickmaschine, umfassend ein erstes Nadelbett (F1) und ein zweites Nadelbett (F2), wobei die Maschenware einen Brustbereich (2) umfasst, der so konfiguriert ist, dass er an der Brust des Benutzers getragen wird, wobei der Brustbereich eine zentrale Zone (21) und zwei Seitenzonen (22, 23) umfasst, die in Bezug auf die zentrale Zone im Wesentlichen symmetrisch sind, wobei das Verfahren die Schritte (101, 102) umfasst für jede der Seitenzonen einen unteren Abschnitt (221, 231) und einen oberen Abschnitt (222, 232) herzustellen, mit einem Gestrick mit modifizierter Verflechtung in Bezug auf den Rest der Maschenware, **dadurch gekennzeichnet dass**

- das Gestrick des unteren Teils eine Vielzahl von Maschen (A1, Y, X1, Y1) aufweist, die verdoppelt und in einer Serie von Reihen (R1, R2) gelegt sind in der Richtung (S1) des oberen Teils, um so eine Verbreiterung Gestrickes zu erreichen;
- das Gestrick des oberen Teils eine Vielzahl von Maschen (A2, B, B1, C) umfasst, die in einer Serie von Reihen (R4) in der distalen Richtung (S1) von dem unteren Abschnitt überlappend gelegt sind, um so eine Verengung zu des Gestricks zu erreichen.

7. Verfahren nach Anspruch 6, **dadurch gekennzeichnet, dass** es den Schritt umfasst, für jede der Seitenzonen (22, 23) einen mittleren Abschnitt (223, 233) herzustellen, der zwischen dem unteren Teil und dem oberen Teil angeordnet ist, wobei das Gestrick des mittleren Abschnitt eine Reihe von Reihen (RC) in der distalen Richtung (S1) von dem unteren Abschnitt mit einer Breite umfasst, die der Breite der letzten Reihe (RL) des Gestrickes des unteren Teils entspricht.

8. Verfahren nach einem oder mehreren der Ansprüche 6 bis 7, **dadurch gekennzeichnet, dass** der Schritt (101) des Herstellens des unteren Teils (221, 231) die folgenden Schritte umfasst:

i) Herstellen einer ersten Reihe (R1) mit einer Vielzahl von Maschen, die entsprechende Nadelpositionen an dem ersten Nadelbett (F1) einnehmen;
ii) Auswählen einer ersten Masche (A) in der ersten Reihe (R1), wobei die erste Masche an dem ersten Nadelbett (F1) eine erste Referenznadelposition (P1) einnimmt;
iii) Auswählen von zweiten Maschen (Z) in der ersten Reihe (R1), wobei die zweiten Maschen an dem ersten Nadelbett (F1) die benachbarten Nadelpositionen (P_z) einnehmen, die der ersten Referenznadelposition (P1) folgen, in der Aufweitrichtung (D1) des Gestricks;
iv) Durchführen der Verdopplung der ersten Masche (A) in einer ersten doppelten Masche (A1) und in einer zweiten doppelten Masche (Y), wobei der erste doppelte Masche (A1) die erste Referenznadelposition (P1) an dem ersten Nadelbett einnimmt (F1), wobei die zweite doppelte Masche in dem zweiten Nadelbett (F2) bewegt wird, um die erste Referenznadelposition (P1) an dem zweiten Nadelbett (F2) zu besetzen;
v) Bewegen der zweiten Maschen (Z) in dem zweiten Nadelbett (F2), um an dem zweiten Nadelbett (F2) die benachbarten Nadelpositionen (P_z) zu besetzen, die der ersten Referenznadelposition (P1) folgen, in der Aufweitrichtung (D1) des Gestricks;
vi) Bewegen der zweiten doppelten Masche (A2) und der zweiten Maschen (Z) in dem ersten Nadelbett (F1) durch Ausführen einer ersten Translation (K1) einer Nadelposition in der Aufweitrichtung (D1) des Gestricks, um an dem ersten Nadelbett (F1) die benachbarten Nadelpositionen (P_Z), die der ersten Referenznadelposition (P1) folgen, in der Aufweitrichtung (D1) des Gestricks zu besetzen.

9. Verfahren nach Anspruch 8, **dadurch gekennzeichnet, dass** der Schritt (101) der Herstellung des unteren Teils (221, 231) die folgenden weiteren Schritte umfasst:

vii) Herstellen einer zweiten Reihe (R2), die mit der ersten Reihe in der Richtung (S1) des oberen Abschnitts überlappt ist, wobei die zweite Reihe eine Breite aufweist, die der Breite der ersten Reihe (R1) entspricht nach Beendigung der Schritte i)-vi), und umfassend eine Vielzahl von Maschen, die entsprechende Nadelpositionen an dem ersten Nadelbett (F1) einnehmen;
viii) Auswählen einer dritten Masche (X) in der zweiten Reihe (R2), wobei die dritte Masche an dem ersten Nadelbett (F1) eine zweite Referenznadelposition (P2) einnimmt;
ix) Auswählen von vierten Maschen (Z1) in der zweiten Reihe (R2), wobei die vierten Maschen an dem ersten Nadelbett (F1) die benachbarte Nadelpositionen (P_{Z1}) einnehmen, die der zweiten Referenznadelposition (P2) folgen in Aufweitrichtung (D1) des Gestricks;
x) Durchführen der Verdoppelung der dritten Masche (X) in einer dritten Doppelmasche (X1) und in einer vierten Doppelmasche (Y1), wobei

der dritte Doppelmasche (X1) die zweite Referenznadelposition (P2) am ersten Nadelbett (F1) einnimmt, wobei die vierte doppelte Masche (X1) in dem zweiten Nadelbett (F2) bewegt wird, um die zweite Referenznadelposition (P2) an dem zweiten Nadelbett (F2) zu besetzen;

xi) Bewegen der vierten Maschen (Z1) in dem zweiten Nadelbett (F2), um an dem zweiten Nadelbett (F2) die benachbarten Nadelpositionen (P_{Z1}) zu belegen, die der zweiten Referenznadelposition (P2) folgen in der Aufweitrichtung (D1) des Gestricks;

xii) Bewegen der vierten doppelten Masche (Y1) und der vierten Maschen (Z1) in dem ersten Nadelbett (F1) durch Durchführen einer zweiten Translation (K2) einer Nadelposition in der Aufweitrichtung (D1) des Gestricks, um an dem ersten Nadelbett (F1) die benachbarten Nadelpositionen (P_{Z1}), die der zweiten Referenznadelposition (P2) folgen, in der Aufweitrichtung (D1) des Gestricks zu besetzen.

10. Verfahren nach Anspruch 9, **dadurch gekennzeichnet, dass** der Schritt (101) zur Herstellung des unteren Teils (221, 231) den folgenden weiteren Schritt umfasst:

xiii) Herstellen eines Satzes von mittleren Reihen (RI) in der Richtung (S1) des oberen Abschnitts, wobei die mittleren Reihen (R1) eine Breite aufweisen, die der Breite der zweiten Reihe (R2) entspricht, nach dem Abschluss der Schritte vii)-xiii).

11. Verfahren nach einem oder mehreren der Ansprüche 6 bis 10, **dadurch gekennzeichnet, dass** der Schritt (102) zur Herstellung des oberen Teils (222, 232) die folgenden Schritte umfasst:

I) Herstellen einer vierten Reihe (R4) mit einer Vielzahl von Maschen, die entsprechende Nadelpositionen an dem ersten Nadelbett (F1) einnehmen;

II) Auswählen einer fünften Masche (A2) in der vierten Reihe (R4), wobei die fünfte Masche an dem ersten Nadelbett (F1) eine dritte Referenznadelposition (P3) einnimmt;

III) Auswählen einer sechsten Masche (B1) in der vierten Reihe (R4), wobei die sechste Masche an dem ersten Nadelbett (F1) eine vierte Referenznadelposition (P4) einnimmt, die der dritten Referenznadelposition (P3) vorangeht in der Verengungsrichtung (D2) des Gestricks;

IV) Auswählen der siebten Maschen (B) in der vierten Reihe (R4), wobei die siebten Maschen an dem ersten Nadelbett (F1) in den benachbarten Nadelpositionen (P_B) zwischen der dritten Referenznadelposition (P3) und dem vierten halten Referenznadelposition (P4) umfasst sind;

V) Auswählen von achten Maschen (C) in der vierten Reihe (R4), wobei die achten Maschen an dem ersten Nadelbett (F1) den benachbarten Nadelpositionen (Pc), die der vierten Referenznadelposition (P4) vorangehen in der Verengungsrichtung (D2) des Gestricks;

VI) Bewegen der die fünfte Masche (A2), der sechste Masche (B1) und der siebten Maschen (B) in dem zweiten Nadelbett (F2), um an dem zweiten Nadelbett (F2) die dritte Referenznadelposition (P3), die vierte Referenznadelposition (P4) und die benachbarten Nadelpositionen (PB), die zwischen der dritten Referenznadelposition (P3) und der vierten Referenznadelposition (P4) angeordnet sind, zu besetzen;

VII) Bewegen der siebten Maschen (B) und der sechsten Masche (B1) in dem ersten Nadelbett (F1) durch Durchführen einer dritten Translation (K3) einer Nadelposition in der Verengungsrichtung (D2) des Gestricks, um an dem ersten Nadelbett (F1) die dritte Referenznadelposition (P3) und die benachbarten Nadelpositionen (P_B), die der dritten Referenznadelposition vorangehen, in der Verengungsrichtung (D2) des Gestricks zu besetzen, wobei die sechste Masche (B1), der nach der dritten Translation eine fünfte Referenznadelposition (P5) in dem ersten Nadelbett (F1) einnimmt;

VIII) Bewegen der sechste Masche (B1) in dem zweiten Nadelbett (F2), um so die fünfte Referenznadelposition (P5) in dem zweiten Nadelbett (F2) zu besetzen;

IX) Bewegen der achten Maschen (C) in dem zweiten Nadelbett (F2), um an dem zweiten Nadelbett (F2) die benachbarten Nadelpositionen (P_c) zu besetzen, die der vierten Referenznadelposition (P4) vorangehen in der Verengungsrichtung (D2) des Gestricks;

X) Bewegen der acht Maschen (C) in dem ersten Nadelbett (F1) durch Durchführen einer vierten Translation (K4) zweier Nadelpositionen in der Verengungsrichtung (D2) des Gestricks, um so bei dem ersten Nadelbett (F1) die fünfte Referenznadelposition (P5) und die benachbarten Nadelpositionen (P4, P_C) zu besetzen, die der fünften Referenznadelposition vorangehen in der Verengungsrichtung (D2) des Gestricks;

XI) Bewegung der fünfte Masche (A2) in dem ersten Nadelbett (F1), so dass die fünfte Masche mit der Masche (B) überlappt, die die dritte Referenznadelposition (P3) in dem ersten Nadelbett (F1) einnimmt;

XII) Bewegen der sechsten Masche (B1) in dem ersten Nadelbett (F1), so dass die sechste Masche mit der Masche (C) überlappt, die die fünfte Referenznadelposition (P5) einnimmt an dem

ersten Nadelbett (F1).

12. Verfahren nach Anspruch 11, **dadurch gekennzeichnet, dass** der Schritt (102) zum Herstellen des oberen Teils (222, 232) den folgenden weiteren Schritt umfasst:

XIII) Herstellen von einer oder mehrerer fünfter Reihen (R5), die mit der vierten Reihe (R4) in der distalen Richtung (S1) von dem unteren Abschnitt überlappen, wobei die fünfte Reihe eine Breite aufweist, die der Breite der vierten Reihe entspricht nach der Beendigung der Schritte I) -XII).

Revendications

1. Vêtement tricoté (1), ou partie de celui-ci, comprenant une région pectorale (2) configurée pour être portée sur la poitrine de l'utilisateur, ladite région pectorale comprenant une zone centrale (21) et deux zones latérales (22, 23) qui sont sensiblement symétriques par rapport à ladite zone centrale, chacune desdites zones latérales comprenant une partie inférieure (221, 231) et une partie supérieure (222, 232) présentant un tissu tricoté avec un entrecroisement modifié par rapport au reste du vêtement tricoté, **caractérisé en ce que** :

- le tissu tricoté de ladite partie inférieure comprend une pluralité de mailles (A1, Y, X1, Y1) qui sont doublées et définies en une position adjacente sur une série de rangées (R1, R2, R1', R2'), dans la direction (S1) vers ladite partie supérieure, de manière à obtenir un élargissement du tissu tricoté ;
- le tissu tricoté de ladite partie supérieure comprend une pluralité de mailles (A2, B, B1, C) chevauchées sur une série de rangées (R4), dans la direction distale (S1) depuis ladite partie inférieure, de manière à obtenir un rétrécissement du tissu tricoté.

2. Vêtement tricoté, ou partie de celui-ci, selon la revendication 1, **caractérisé en ce que** chacune desdites zones latérales comprend une partie intermédiaire (223, 233), positionnée entre ladite partie inférieure et ladite partie supérieure, le tissu tricoté de ladite partie intermédiaire comprenant une série de rangées (RC), dans la direction distale (S1) depuis ladite partie inférieure, avec une largeur correspondant à la largeur de la dernière rangée (RL) du tissu tricoté de ladite partie inférieure.

3. Vêtement tricoté, ou partie de celui-ci, selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le tissu tricoté de ladite partie inférieure (221, 231) comprend au moins une paire (T1, T2) de rangées formée par :

- une première rangée (R1, R1') comprenant une pluralité de mailles (A1, Y) qui sont doublées et définies en une position adjacente ;
- une deuxième rangée (R2, R2'), chevauchée par ladite première rangée dans la direction (S1) de ladite partie supérieure et comprenant une pluralité de mailles (X1, Y1) qui sont doublées et définies en une position adjacente.

4. Vêtement tricoté, ou partie de celui-ci, selon la revendication 3, **caractérisé en ce que** le tissu tricoté de ladite partie inférieure comprend une séquence de rangées formée par :

- une première paire (T1) de rangées comprenant lesdites première et deuxième rangées (R1, R2) ;
- une deuxième paire (T2) de rangées comprenant lesdites première et deuxième rangées (R1', R2') ;
- une série de rangées intermédiaires (RI) qui sépare ladite première paire (T1) de rangées de ladite deuxième paire (T2) de rangées dans la direction (S1) de ladite partie supérieure, lesdites rangées intermédiaires (RI) présentant une largeur correspondant à la largeur de la deuxième rangée (R2) de ladite première paire (T1) de rangées.

5. Vêtement tricoté, ou partie de celui-ci, selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le tissu tricoté de ladite partie supérieure (222, 232) comprend une séquence de rangées comprenant :

- une quatrième rangée (R4) comprenant une pluralité de mailles (A2, B, B1, C) se chevauchant ;
- une ou plusieurs cinquièmes rangées (R5), chevauchées par ladite quatrième rangée dans la direction distale (S1) depuis ladite partie inférieure, avec une largeur correspondant à la largeur de ladite quatrième rangée.

6. Procédé de fabrication d'un vêtement tricoté, ou d'une partie de celui-ci, au moyen d'un appareil de tricotage à double fonture, comprenant une première fonture (F1) et une seconde fonture (F2), ledit vêtement tricoté comprenant une région pectorale (2) configurée pour être portée sur la poitrine de l'utilisateur, ladite région pectorale comprenant une zone centrale (21) et deux zones latérales (22, 23) qui sont sensiblement symétriques par rapport à ladite zone centrale, ledit procédé comprenant les étapes (101, 102) de fabrication, pour chacune desdites zo-

nes latérales, d'une partie inférieure (221, 231) et d'une partie supérieure (222, 232), présentant un tissu tricoté avec un entrelacement modifié par rapport au reste du vêtement tricoté **caractérisé en ce que**,

- le tissu tricoté de ladite partie inférieure comprend une pluralité de mailles (A1, Y, X1, Y1) qui sont doublées et définies en une position adjacente sur une série de rangées (R1, R2), dans la direction (S1) vers ladite partie supérieure, de manière à obtenir un élargissement dudit tissu tricoté ;
- le tissu tricoté de ladite partie supérieure comprend une pluralité de mailles (A2, B, B1, C) chevauchées sur une série de rangées (R4), dans la direction distale (S1) depuis ladite partie inférieure, de manière à obtenir un rétrécissement du tissu tricoté.

7. Procédé, selon la revendication 6, **caractérisé en ce qu'**il comprend l'étape de fabrication, pour chacune desdites zones latérales (22, 23), d'une partie intermédiaire (223, 233), positionnée entre ladite partie inférieure et ladite partie supérieure, le tissu tricoté de ladite partie intermédiaire comprenant une série de rangées (RC), dans la direction distale (S1) depuis ladite partie inférieure, avec une largeur correspondant à la largeur de la dernière rangée (RL) du tissu tricoté de ladite partie inférieure.

8. Procédé, selon l'une quelconque des revendications 6 ou 7, **caractérisé en ce que** l'étape (101) de fabrication de ladite partie inférieure (221, 231) comprend les étapes suivantes :

i) la fabrication d'une première rangée (R1) présentant une pluralité de mailles qui occupent des positions d'aiguille correspondantes sur ladite première fonture (F1) ;
ii) la sélection d'une première maille (A) dans ladite première rangée (R1), ladite première maille occupant, sur ladite première fonture (F1), une première position d'aiguille de référence (P1) ;
iii) la sélection de deuxièmes mailles (Z) dans ladite première rangée (R1), lesdites deuxièmes mailles occupant, sur ladite première fonture (F1), les positions d'aiguille adjacentes (P_Z) qui suivent ladite première position d'aiguille de référence (P1), dans la direction d'élargissement (D1) du tissu tricoté ;
iv) la réalisation du doublage de ladite première maille (A) en une première maille doublée (A1) et en une deuxième maille doublée (Y), ladite première maille doublée (A1) occupant ladite première position d'aiguille de référence (P1) sur ladite première fonture (F1), ladite deuxième maille doublée étant déplacée dans ladite seconde fonture (F2) de manière à occuper ladite première position d'aiguille de référence (P1), sur ladite seconde fonture (F2) ;
v) le déplacement desdites deuxièmes mailles (Z) dans ladite seconde fonture (F2), de manière à occuper, sur ladite seconde fonture (F2), les positions d'aiguille adjacentes (P_Z) qui suivent ladite première position d'aiguille de référence (P1), dans la direction d'élargissement (D1) du tissu tricoté ;
vi) le déplacement de ladite deuxième maille doublée (A2) et desdites deuxièmes mailles (Z) dans ladite première fonture (F1), en réalisant une première translation (K1) d'une position d'aiguille dans la direction d'élargissement (D1) du tissu tricoté, de manière à occuper, sur ladite première fonture (F1), les positions d'aiguille adjacentes (P_Z) qui suivent ladite première position d'aiguille de référence (P1), dans la direction d'élargissement (D1) du tissu tricoté.

9. Procédé, selon la revendication 8, **caractérisé en ce que** l'étape (101) de fabrication de ladite partie inférieure (221, 231) comprend les étapes supplémentaires suivantes :

vii) la fabrication d'une deuxième rangée (R2), chevauchée par ladite première rangée dans la direction (S1) vers ladite partie supérieure, ladite deuxième rangée présentant une largeur correspondant à la largeur de ladite première rangée (R1), une fois lesdites étapes i) à vi) terminées, et comprenant une pluralité de mailles qui occupent des positions d'aiguille correspondantes sur ladite première fonture (F1) ;
viii) la sélection d'une troisième maille (X) dans ladite deuxième rangée (R2), ladite troisième maille occupant, sur ladite première fonture (F1), une deuxième position d'aiguille de référence (P2) ;
ix) la sélection de quatrièmes mailles (Z1) dans ladite deuxième rangée (R2), lesdites quatrièmes mailles occupant, sur ladite première fonture (F1), les positions d'aiguille adjacentes (P_{Z1}) qui suivent ladite deuxième position d'aiguille de référence (P2), dans la direction d'élargissement (D1) du tissu tricoté ;
x) la réalisation du doublage de ladite troisième maille (X) en une troisième maille doublée (X1) et en une quatrième maille doublée (Y1), ladite troisième maille doublée (X1) occupant ladite deuxième position d'aiguille de référence (P2) sur ladite première fonture (F1), ladite quatrième maille doublée (X1) étant déplacée dans ladite seconde fonture (F2) de manière à occuper ladite deuxième position d'aiguille de référence (P2), sur ladite seconde fonture (F2) ;

xi) le déplacement desdites quatrièmes mailles (Z1) dans ladite seconde fonture (F2), de manière à occuper sur ladite seconde fonture (F2), les positions d'aiguille adjacentes (P_{Z1}) qui suivent ladite deuxième position d'aiguille de référence (P2), dans la direction d'élargissement (D1) du tissu tricoté ;

xii) le déplacement de ladite quatrième maille doublée (Y1) et desdites quatrièmes mailles (Z1) dans ladite première fonture (F1), en réalisant une deuxième translation (K2) d'une position d'aiguille dans la direction d'élargissement (D1) du tissu tricoté, de manière à occuper, sur ladite première fonture (F1), les positions d'aiguille adjacentes (P_{Z1}) qui suivent ladite deuxième position d'aiguille de référence (P2), dans la direction d'élargissement (D1) du tissu tricoté.

10. Procédé, selon la revendication 9, **caractérisé en ce que** l'étape (101) de fabrication de ladite partie inférieure (221, 231) comprend les étapes supplémentaires suivantes :

xiii) la fabrication d'un ensemble de rangées intermédiaires (RI), dans la direction (S1) de ladite partie supérieure, lesdites rangées intermédiaires (RI) présentant une largeur correspondant à la largeur de ladite deuxième rangée (R2), une fois lesdites étapes vii)-xiii) terminées.

11. Procédé, selon l'une quelconque des revendications 6 à 10, **caractérisé en ce que** l'étape (102) de fabrication de ladite partie supérieure (222, 232) comprend les étapes suivantes :

I) la fabrication d'une quatrième rangée (R4) présentant une pluralité de mailles qui occupent des positions d'aiguille correspondantes sur ladite première fonture (F1) ;

II) la sélection d'une cinquième maille (A2) dans ladite quatrième rangée (R4), avec une cinquième maille occupant, sur ladite première fonture (F1), une troisième position d'aiguille de référence (P3) ;

III) la sélection d'une sixième maille (B1) dans ladite quatrième rangée (R4), ladite sixième maille occupant, sur ladite première fonture (F1), une quatrième position d'aiguille de référence (P4) qui précède ladite troisième position d'aiguille de référence (P3) dans la direction de rétrécissement (D2) du tissu tricoté ;

IV) la sélection de septièmes mailles (B) dans ladite quatrième rangée (R4), lesdites septièmes mailles occupant, sur ladite première fonture (F1), les positions d'aiguille adjacentes (P_B) comprises entre ladite troisième position d'aiguille de référence (P3) et ladite quatrième position d'aiguille de référence (P4) ;

V) la sélection de huitièmes mailles (C) dans ladite quatrième rangée (R4), lesdites huitièmes mailles occupant, sur ladite première fonture (F1), les positions d'aiguille adjacentes (P_c) qui précèdent ladite quatrième position d'aiguille de référence (P4), dans la direction de rétrécissement (D2) du tissu tricoté ;

VI) le déplacement de ladite cinquième maille (A2), de ladite sixième maille (B1) et desdites septièmes mailles (B) dans ladite seconde fonture (F2), de manière à occuper, sur ladite seconde fonture (F2), ladite troisième position d'aiguille de référence (P3), ladite quatrième position d'aiguille de référence (P4) et les positions d'aiguille adjacentes (P_B) comprises entre ladite troisième position d'aiguille de référence (P3) et ladite quatrième position d'aiguille de référence (P4), respectivement ;

VII) le déplacement desdites septièmes mailles (B) et de ladite sixième maille (B1) dans ladite première fonture (F1), en réalisant une troisième translation (K3) d'une position d'aiguille dans la direction de rétrécissement (D2) du tissu tricoté, de manière à occuper, sur ladite première fonture (F1), ladite troisième position d'aiguille de référence (P3) et les positions d'aiguille adjacentes (P_B) qui précèdent ladite troisième position d'aiguille de référence, dans la direction de rétrécissement (D2) du tissu tricoté, ladite sixième maille (B1) occupant, après ladite troisième translation, une cinquième position d'aiguille de référence (P5), sur ladite première fonture (F1) ;

VIII) le déplacement de ladite sixième maille (B1) dans ladite seconde fonture (F2), de manière à occuper ladite cinquième position d'aiguille de référence (P5) sur ladite seconde fonture (F2) ;

IX) le déplacement desdites huitièmes mailles (C) dans ladite seconde fonture (F2), de manière à occuper, sur ladite seconde fonture (F2), les positions d'aiguille adjacentes (P_c) qui précèdent ladite quatrième position d'aiguille de référence (P4), dans la direction de rétrécissement (D2) du tissu tricoté ;

X) le déplacement desdites huitièmes mailles (C) dans ladite première fonture (F1), en réalisant une quatrième translation (K4) de deux positions d'aiguille dans la direction de rétrécissement (D2) du tissu tricoté, de manière à occuper, sur ladite première fonture (F1), ladite cinquième position d'aiguille de référence (P5) et les positions d'aiguille adjacentes (P4, P_C) qui précèdent ladite cinquième position d'aiguille de référence, dans la position de rétrécissement (D2) du tissu tricoté ;

XI) le déplacement de ladite cinquième maille (A2) dans ladite première fonture (F1), de sorte

que ladite cinquième maille soit chevauchée par la maille (B) qui occupe ladite troisième position d'aiguille de référence (P3), sur ladite première fonture (F1) ;

XII) le déplacement de ladite sixième maille (B1) dans ladite première fonture (F1) de sorte que ladite sixième maille soit chevauchée par la maille (C) qui occupe ladite cinquième position d'aiguille de référence (P5), sur ladite première fonture (F1).

12. Procédé, selon la revendication 11, **caractérisé en ce que** l'étape (102) de fabrication de ladite partie supérieure (222, 232) comprend les étapes supplémentaires suivantes :

XIII) la fabrication d'une ou de plusieurs cinquièmes rangées (R5), chevauchées par ladite quatrième rangée (R4) dans la direction distale (S1) depuis ladite partie inférieure, lesdites cinquièmes rangées présentant une largeur correspondant à la largeur de ladite quatrième rangée, une fois lesdites étapes I)-XII) terminées.

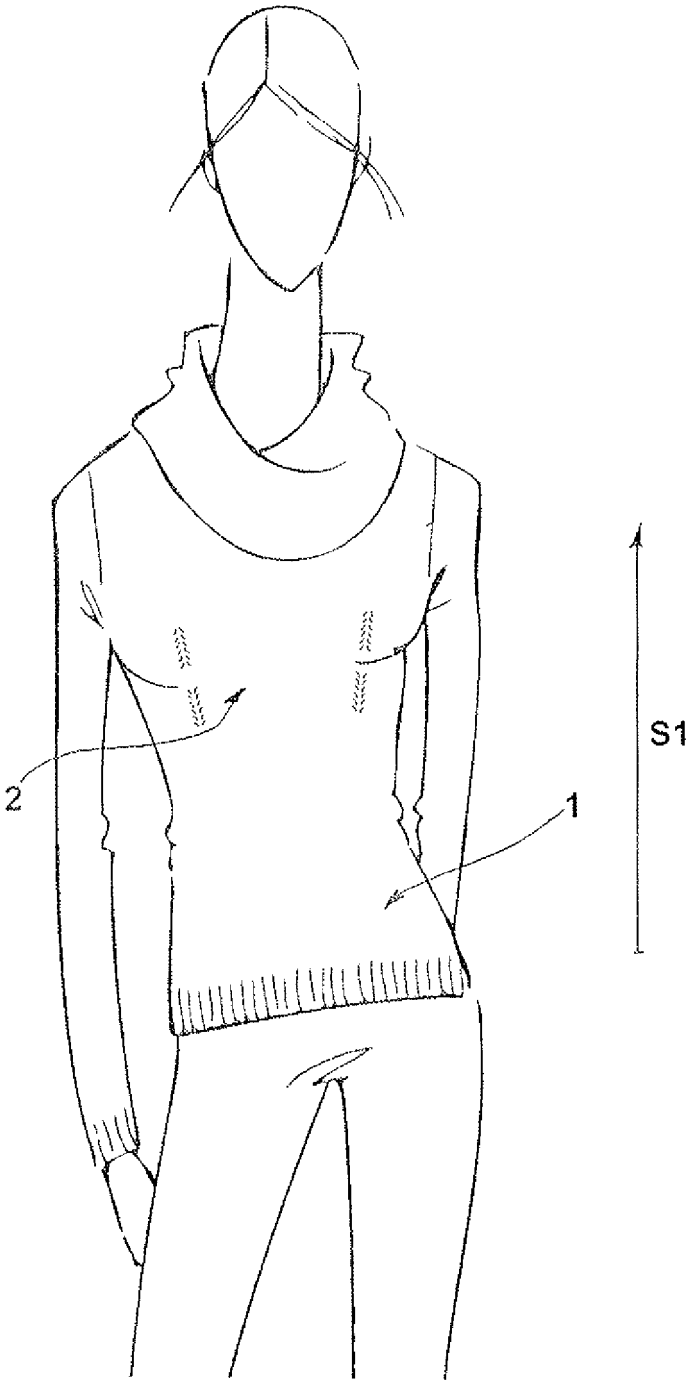


FIG. 1

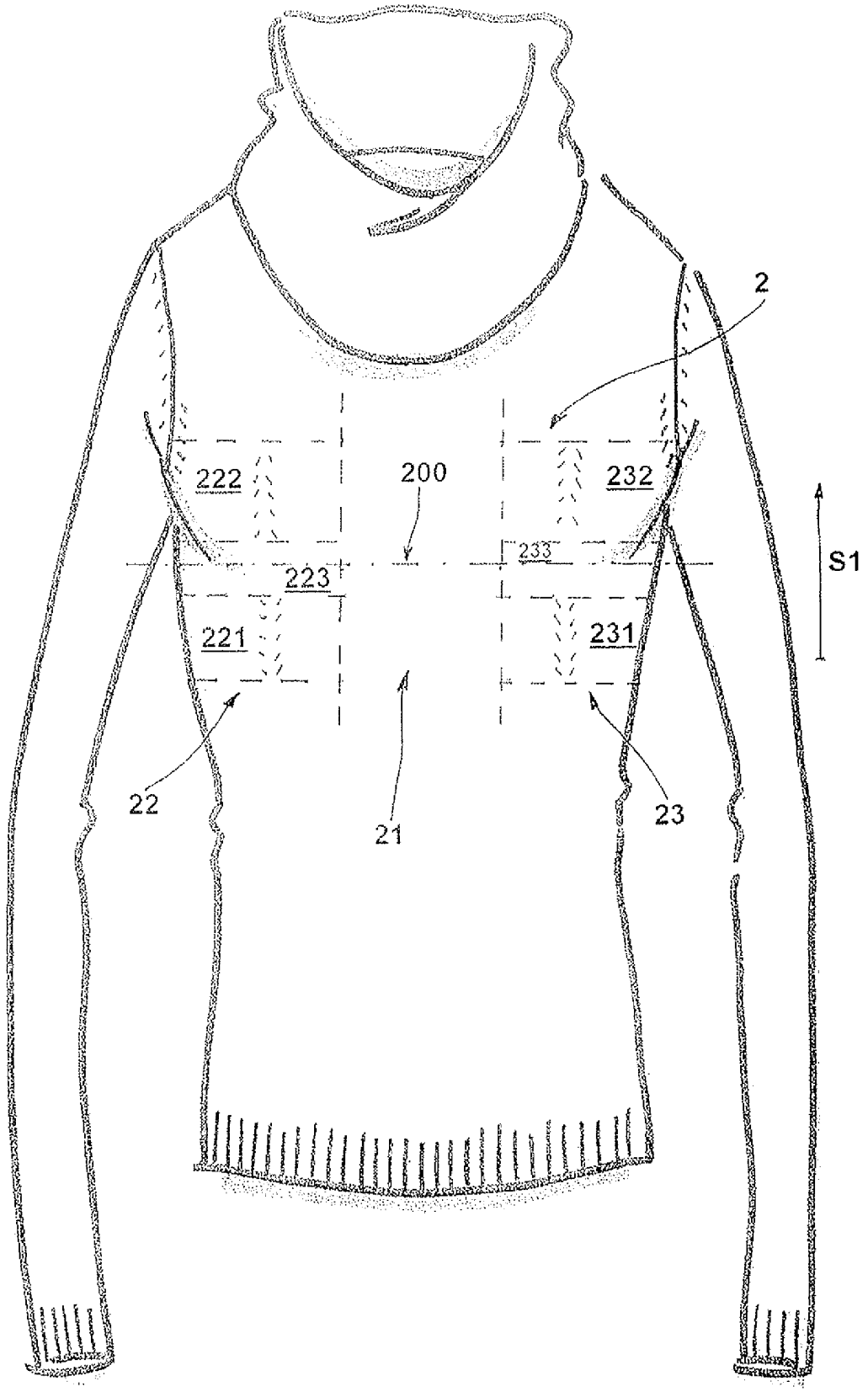


FIG. 2

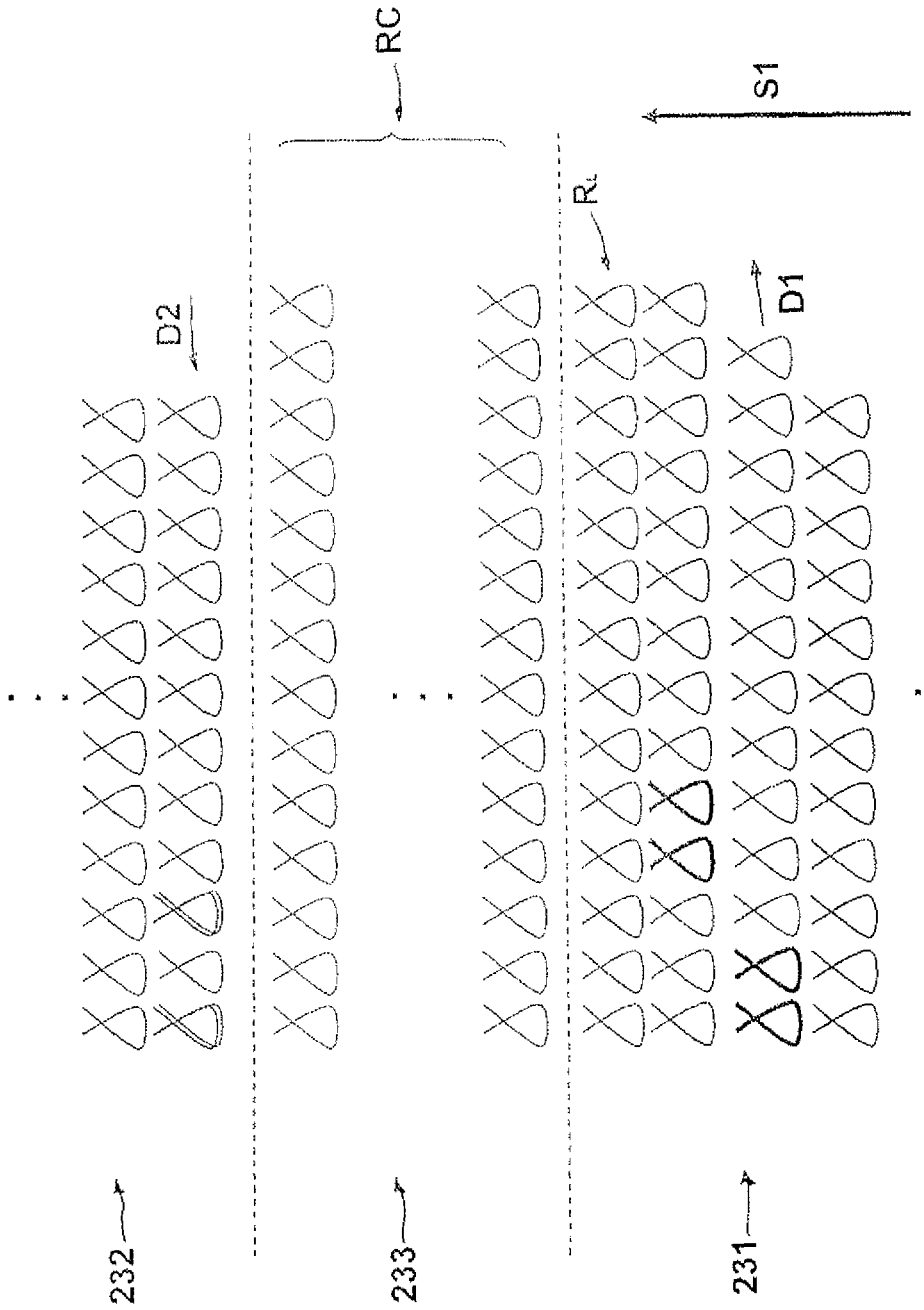


FIG. 3

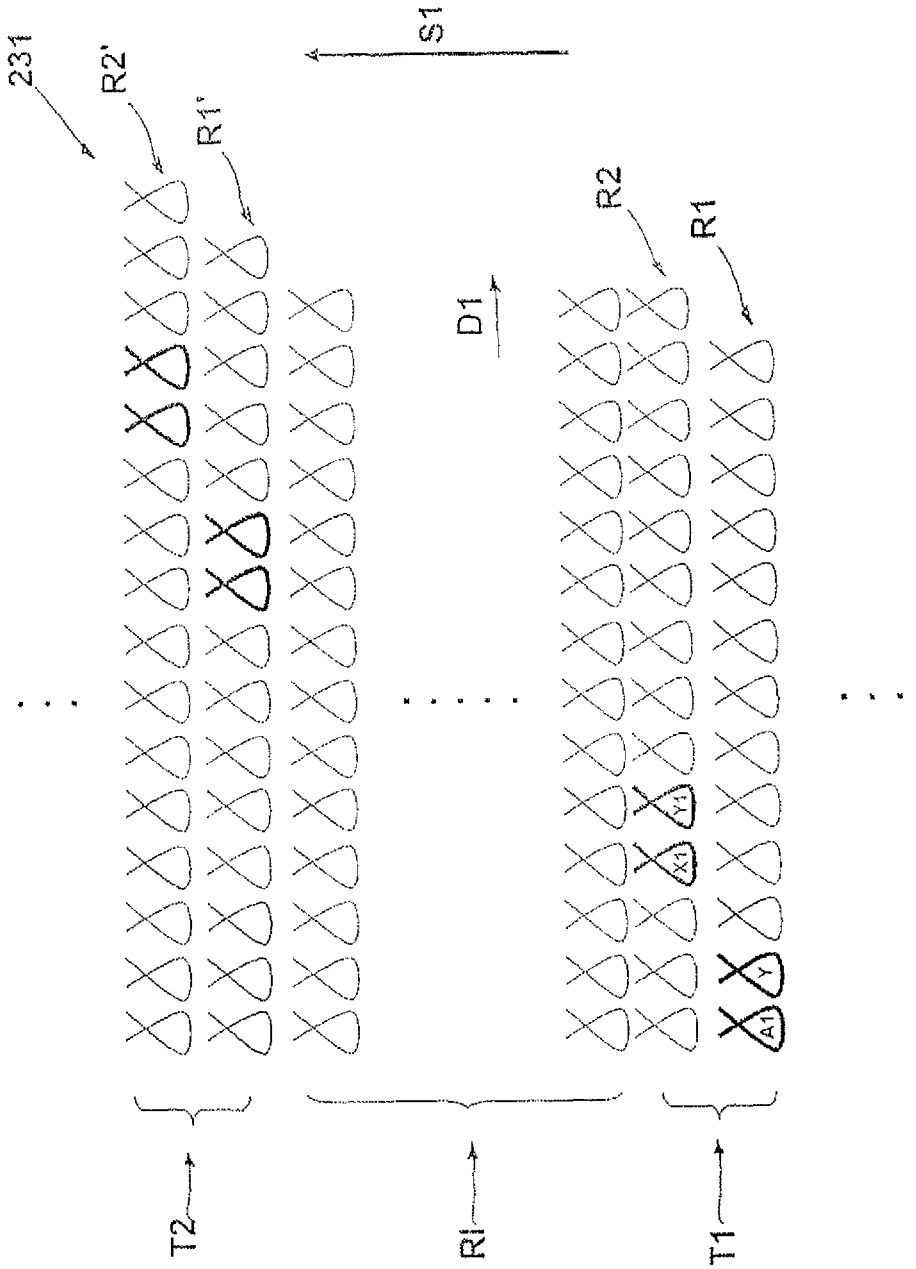


FIG. 4

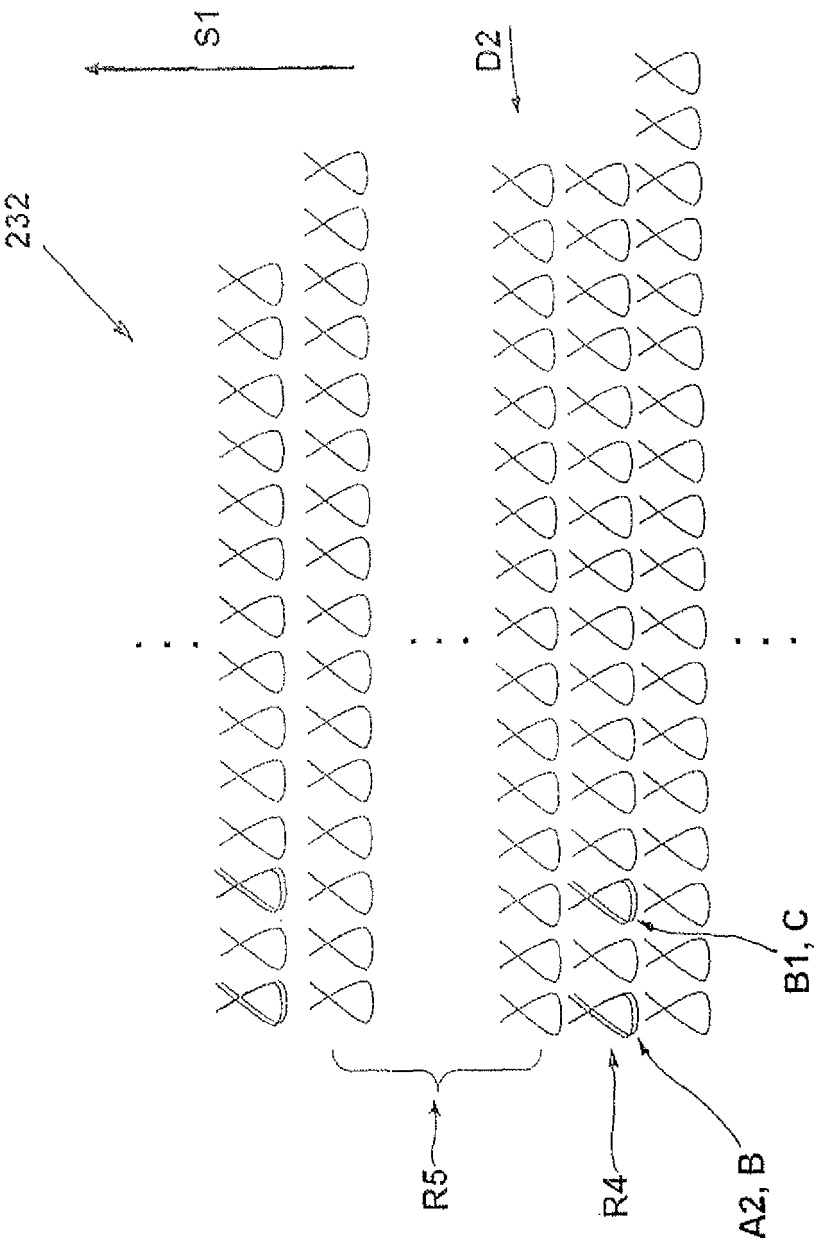


FIG. 5

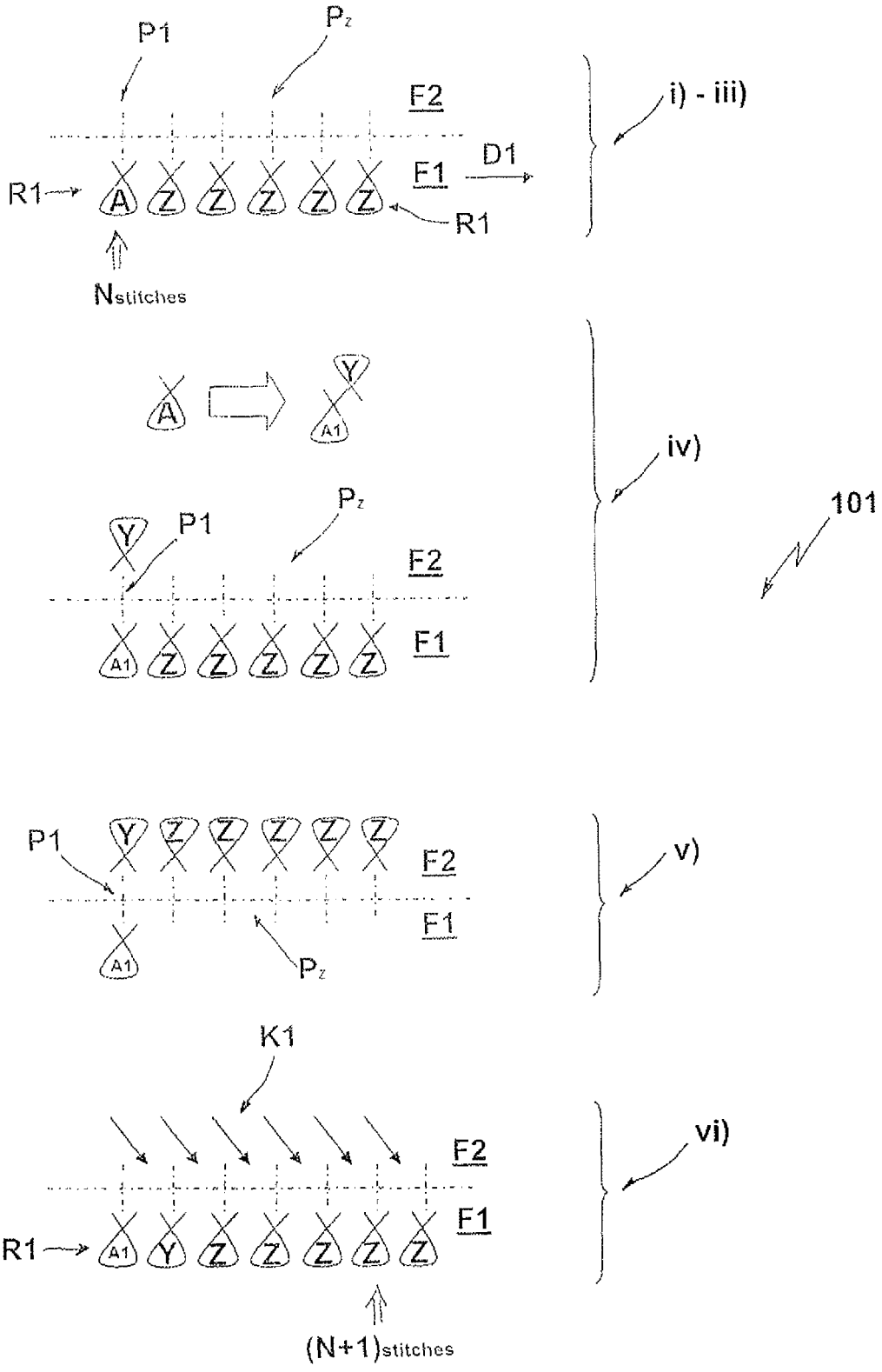

P1
Pz
F2
D1
F1
R1
A
Z
R1
i) - iii)
Nstitches
Y
A1
iv)
101
P1
Pz
F2
F1
P1
Y
Z
F2
F1
A1
Pz
v)
K1
F2
F1
R1
A1
Y
Z
vi)
(N+1)stitches

FIG. 6

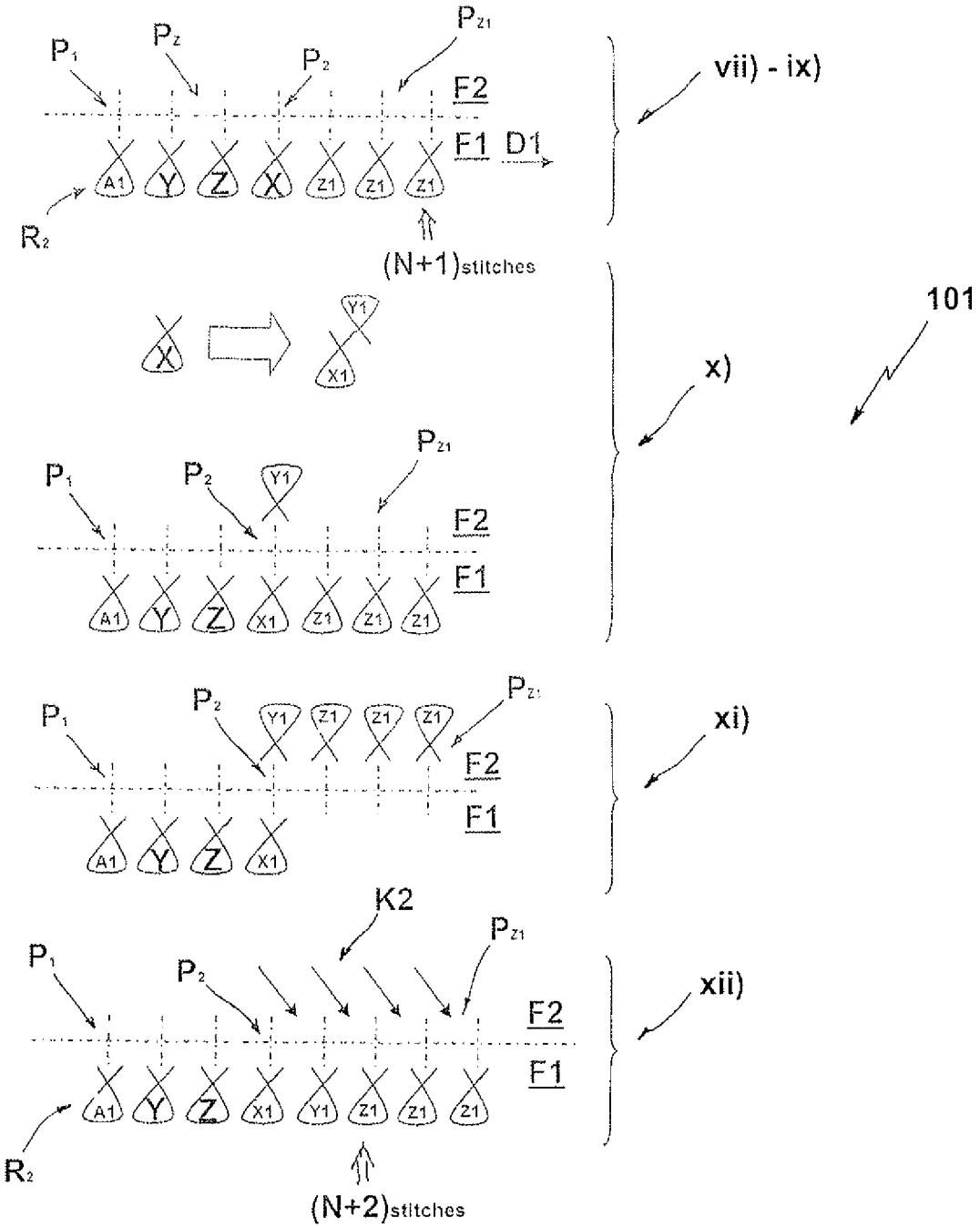

P1
Pz
P2
Pz1
F2
F1
D1
A1
Y
Z
X
Z1
R2
(N+1)stitches
vii) - ix)
101
X
Y1
X1
x)
P1
P2
Y1
Pz1
F2
F1
A1
Y
Z
X1
Z1
xi)
K2
xii)
(N+2)stitches

FIG. 7

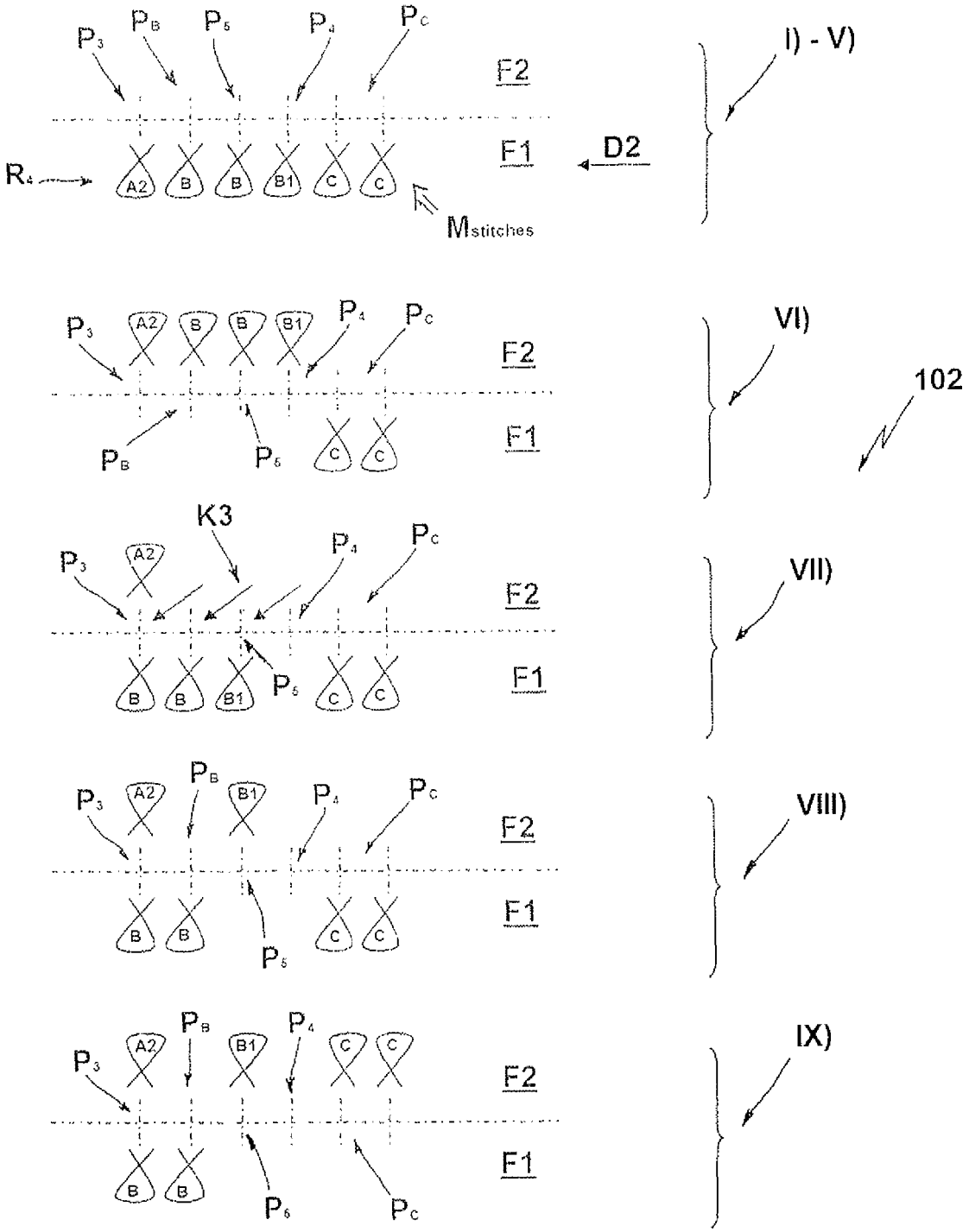

P3
PB
P5
P4
PC
F2
F1
D2
R4
A2
B
B
B1
C
C
Mstitches
I) - V)
VI)
102
K3
VII)
VIII)
IX)

FIG. 8

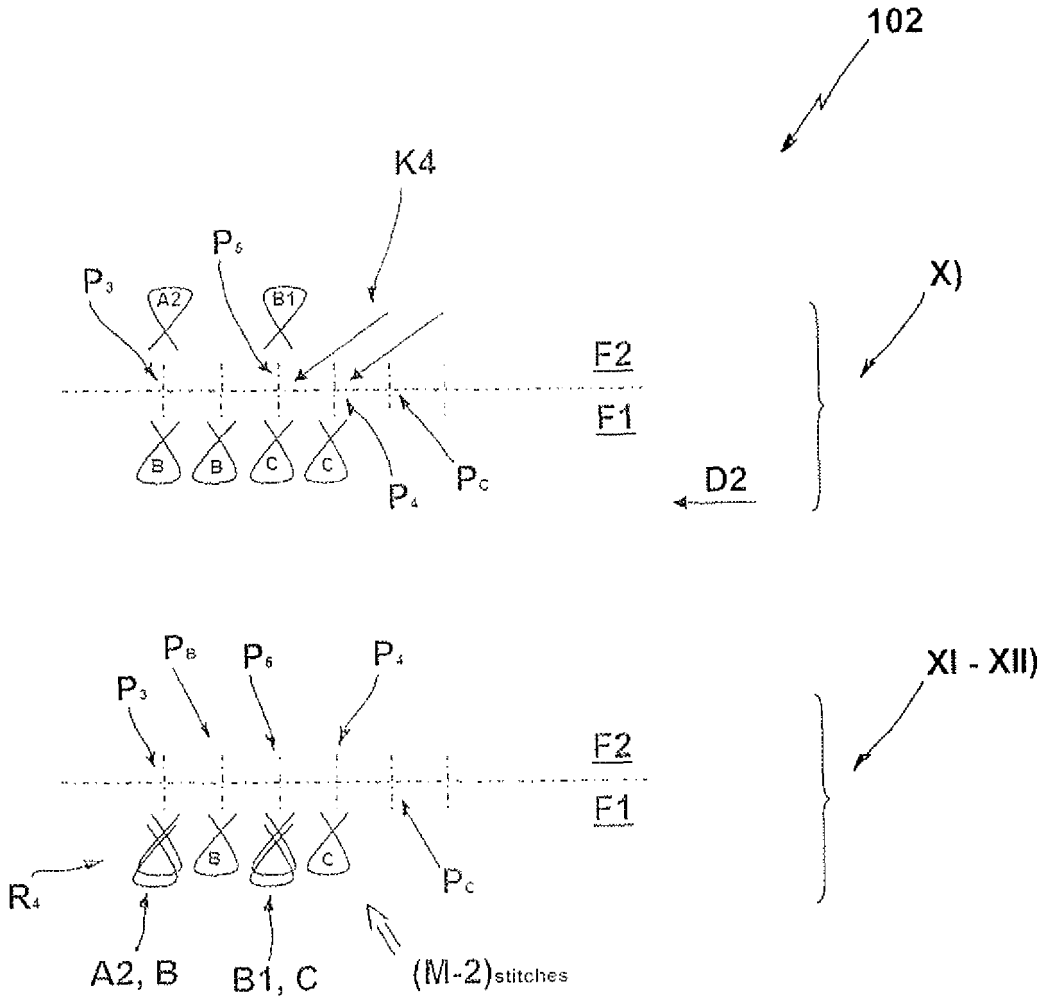

102
K4
P5
P3
A2
B1
X)
F2
F1
B
B
C
C
P4
PC
D2
PB
P6
P4
P3
XI - XII)
F2
F1
B
C
PC
R4
A2, B
B1, C
(M-2)stitches

FIG. 9

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- DE 2410368 A1 **[0008] [0009]**
- US 3389580 A **[0008]**