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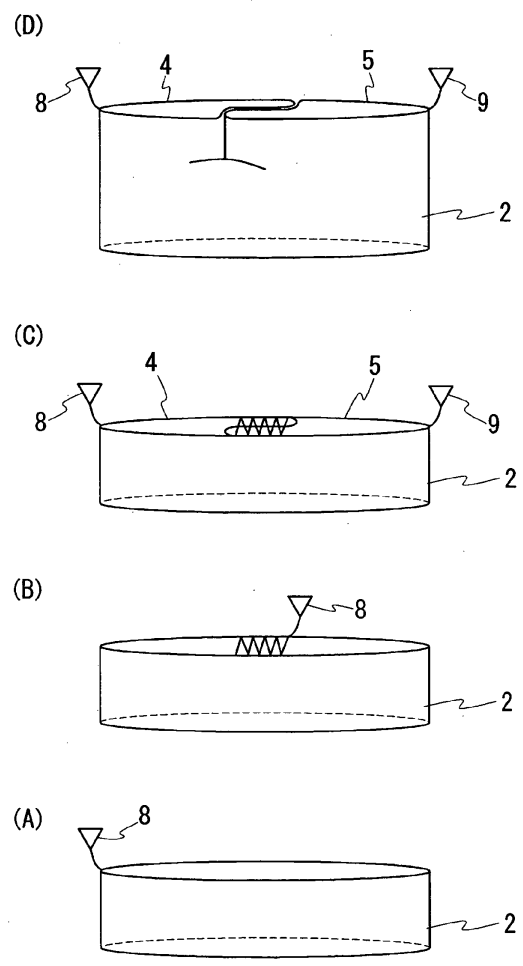
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(54) **Knitting method of tubular knitted fabric, and tubular knitted fabric**

(57) A knitting method of a tubular knitted fabric in which a gore is formed at a position of a crotch of a plurality of branched tubular portions branched from an integrated tubular portion, the tubular knitted fabric not being formed with a double stitch at the position of the gore. A rise 2 (integrated tubular portion) is knitted (S1). A held stitch is formed alternately to the front and the back with respect to the knitting needles of the front and back needle beds on which the stitches of the rise are not held within a knitting width of the rise 2 (S2). The held stitches of one needle bed (BB) are transferred to the other needle bed (FB), the knitting is performed using the knitting needles within the knitting width of the rise 2, and a left leg portion (branched portion) 4 following the rise 2 starts to be knitted (S3, S4). The stitches of the FB in the formed range of the held stitches formed in S2 of the stitches of the left leg portion 4 are transferred to the BB. The held stitches of the FB formed in S2 are transferred to the knitting needles of the BB, the knitting is performed using the knitting needles within the knitting width of the rise 2, and a right leg portion 5 (branched portion) adjacent to the left leg portion 4 starts to be knitted.

Fig. 3



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**Description**

## TECHNICAL FIELD

**[0001]** The present invention relates to a knitting method of a tubular knitted fabric for knitting a tubular knitted fabric, which includes an integrated tubular portion and a plurality of branched tubular portions which continue in a wale direction of the integrated tubular portion and which are independent from each other, with a flat knitting machine, and a tubular knitted fabric knitted using the knitting method.

## BACKGROUND ART

**[0002]** Most knit wears have a configuration including a plurality of branched tubular portions independent from each other, and an integrated tubular portion formed by gathering such branched tubular portions. For example, an upper wear such as a sweater is a tubular knitted fabric formed by gathering two tubular sleeves and a tubular body; and a bottom wear such as pants is a tubular knitted fabric in which two leg portions are gathered and connected to one rise. Gloves and socks with tubular finger (toe) portions are also tubular knitted fabrics formed by gathering a plurality of tubular finger bags.

**[0003]** Generally, when knitting the tubular knitted fabric in a seamless manner using a flat knitting machine including at least a pair of front and back needle beds, a plurality of branched tubular portions are individually knitted, and such branched tubular portions are joined to each other and then the integrated tubular portion is knitted. For example, in Patent Document 1, when knitting knit pants using the flat knitting machine, a left leg portion and a right leg portion of tubular form are knitted, and such left leg portion and the right leg portion are joined and then the rise is formed to a tubular shape. Upon joining, a gore is formed in a thickness direction of the knit pants by overlapping and joining a stitch group of one part lined at the termination of the left leg portion and a stitch group of one part lined at the termination of the right leg portion so that the knit pants have a three-dimensional shape that lies along the shape of the human body.

## PRIOR ART DOCUMENT

## PATENT DOCUMENTS

**[0004]** [Patent Document 1] Japanese Patent No. 3887408

## DISCLOSURE OF THE INVENTION

## PROBLEMS TO BE SOLVED BY THE INVENTION

**[0005]** However, in the knitting method of Patent Document 1, a plurality of double stitches where the stitches

of each branched tubular portion to join are overlapped are formed continuously at the forming position of the gore. If the vicinity of the double stitch is a solid color, the double stitch may stand out, and the stretching of the tubular knitted fabric may be restricted, and hence the comfortableness in wearing of the tubular knitted fabric may be affected.

**[0006]** The present invention has been made in view of the above situations, and an object of the present invention is to provide a knitting method of a tubular knitted fabric in which a gore is formed at a position of a crotch of a plurality of branched tubular portions branched from the integrated tubular portion, a double stitch not being formed at the position of the gore, and a tubular knitted fabric knitted by applying the knitting method.

**[0007]** A knitting method of a tubular knitted fabric according to the present invention is for knitting a tubular knitted fabric including an integrated tubular portion and a plurality of branched tubular portions which are continuously formed in a wale direction of the integrated tubular portion and which are independent from each other using a flat knitting machine having at least a pair of front and back needle beds and in which stitches held on a knitting needle of the needle bed are transferable to another knitting needle, the method including the following steps  $\alpha$  to  $\epsilon$ .

(Step  $\alpha$ ) Knitting the integrated tubular portion.

(Step  $\beta$ ) Forming a plurality of held stitches held on the knitting needle by feeding a knitting yarn alternately to the front and the back with respect to knitting needles of the front and back needle beds on which stitches of the integrated tubular portion are not held, within a knitting width of the integrated tubular portion.

(Step  $\gamma$ ) Transferring the held stitches held on the knitting needles of one needle bed of the held stitches formed on the knitting needle in step  $\beta$  to the knitting needles of the other needle bed, performing knitting using some of the knitting needles within a knitting width of the integrated tubular portion including the knitting needles on which the transferred held stitches are held, and starting the knitting of one of the branched tubular portions following the integrated tubular portion.

(Step  $\delta$ ) Transferring the stitches, which are held on the knitting needles of the other needle bed and in a formed range of the held stitches formed in step  $\beta$ , of the stitches knitted in step  $\gamma$  to the knitting needles of the one needle bed.

(Step  $\epsilon$ ) Transferring the held stitches held on the knitting needles of the other needle bed, which is not the target of transfer in step  $\gamma$ , of the held stitches formed on the knitting needle in step  $\beta$  to the knitting needle of the one needle bed, performing knitting using some of the knitting needles within a knitting width of the integrated tubular portion including the knitting needles on which the transferred held stitch-

es are held, and starting the knitting of another branched tubular portion adjacent to the branched tubular portion which knitting started in step  $\gamma$ .

**[0008]** The integrated tubular portion may be in plurals in one tubular knitted fabric. For example, a five toe socks, or the like described in the embodiments hereinafter is a typical example of a tubular knitted fabric including a plurality of integrated tubular portions.

**[0009]** In one aspect of the knitting method of a tubular knitted fabric according to the present invention, in a process of increasing number of knitting courses of one branched tubular portion which knitting started in step  $\gamma$  and number of knitting courses of another branched tubular portion which knitting started in step  $\epsilon$ , each branched tubular portion is preferably knitted alternately by 1 to 5 courses. When knitting each branched tubular portion, the stitches of the other branched tubular portion overlapping a knitting region of the branched tubular portion are held clustered on one of the front or back needle bed so as not to inhibit the knitting of the branched tubular portion.

**[0010]** In one aspect of the knitting method of the tubular knitted fabric according to the present invention, in a process of increasing number of knitting courses of one branched tubular portion which knitting started in step  $\gamma$  and number of knitting courses of another branched tubular portion which knitting started in step  $\epsilon$ , positions where the stitches of the branched tubular portions on the front and back needle beds are held are preferably spaced apart in the knitting width direction so that the knitting regions of the branched tubular portions do not overlap in the knitting width direction. In this case, only one of the branched tubular portions may be moved in the direction of moving away from the other branched tubular portion by transferring, or both branched tubular portions may be moved in the direction of moving away from each other by transferring.

**[0011]** A tubular knitted fabric according to the present invention is a tubular knitted fabric knitted using a flat knitting machine having at least a pair of front and back needle beds and capable of transferring a stitch held on a knitting needle of the needle bed to another knitting needle, the tubular knitted fabric including an integrated tubular portion and a plurality of branched tubular portions which are continuously formed in a wale direction of the integrated tubular portion and which are independent from each other. The tubular knitted fabric according to the present invention is configured by increasing knitting courses from the integrated tubular portion side toward the branched tubular portion side. The tubular knitted fabric according to the present invention includes a joining knitting yarn that alternately tangles with a stitch group of one part in a first knitting course of one branched tubular portion and a stitch group of one part in a first knitting course of another branched portion at a position of a crotch where two adjacent branched tubular portions are branched to connect the stitch groups.

## EFFECTS OF THE INVENTION

**[0012]** According to the knitting method of a tubular knitted fabric of the present invention, the tubular knitted fabric of the present invention including a plurality of branched tubular portions continuously formed in the wale direction of the integrated tubular portion can be knitted, the gore can be formed at the position of the crotch of the adjacent branched tubular portions in the tubular knitted fabric, and the double stitches are not formed at the portion of such gore. Therefore, the satisfactory appearance is obtained at the position of the crotch of the adjacent branched tubular portions, and the stretchability of the tubular knitted fabric is not affected at the relevant crotch.

**[0013]** As each branched tubular portion is alternately knitted by 1 to 5 courses in the process of increasing the number of knitting courses of the two adjacent branched tubular portions, the knitting of the branched tubular portions can be smoothly carried out. If only the knitting course of one of the adjacent branched tubular portions is intensively knitted, the other branched tubular portion held on the knitting needles and not knitted may inhibit the knitting down of the one branched tubular portion, and the knitting may fall behind. Such a problem barely arises up to about five courses for each branched tubular portion.

**[0014]** Furthermore, as the knitting regions of the branched tubular portions are prevented from overlapping in the knitting width direction in the process of increasing the number of knitting courses of the two adjacent branched tubular portions, when knitting one of the branched tubular portions, the stitches of the other branched tubular portion do not need to be held clustered on one of the front or back needle beds. As a result, the branched tubular portions can be knitted concurrently, and the knitting efficiency of the tubular knitted fabric of the present invention can be greatly enhanced.

## BRIEF DESCRIPTION OF THE DRAWINGS

### **[0015]**

Fig. 1 is a schematic view of knit pants shown in an embodiment.

Fig. 2 is a knitting process diagram of the knit pants shown in the embodiment.

Figs. 3(A) to 3(D) are schematic views showing, with time, a knitting state of the knit pants in the process of knitting.

Fig. 4 is a partial loop diagram at a crotch portion of the knit pants shown in the embodiment.

Fig. 5(A) is a schematic view of a sweater shown in an embodiment, and Figs. 5(B) to 5(E) are schematic views showing, with time, a knitting state of the sweater in the process of knitting.

Fig. 6(A) is a schematic view of a five fingered socks shown in an embodiment, and Figs. 6(B) to 6(E) are

schematic views showing, with time, a knitting state of the sock in the process of knitting.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

**[0016]** Embodiments of the present invention will be hereinafter described with reference to the drawings. In the knitting described in the present embodiment, a knitting example using a two-bed flat knitting machine having a pair of front and back needle beds extending in a transverse direction and disposed opposite to each other in a cross direction will be described. The flat knitting machine to be used may be a four-bed flat knitting machine.

**[0017]** In the present embodiment, an example is described in which a knitting method of a tubular knitted fabric of the present invention is applied to knitting of typical knit pants (tubular knitted fabric) 1 shown in Fig. 1. The knit pants 1 include a tubular rise (integrated tubular portion) 2 that covers the waist and the buttocks of a human body, and a left leg portion (branched tubular portion) 4 and a right leg portion (branched tubular portion) 5 of tubular shape formed at lower positions from a crotch portion 3 shown with a chain dashed line. The knit pants 1 have a gore stretching in a thickness direction of the knit pants 1 formed at the position of the crotch portion 3 of both leg portions 4, 5, and are formed three-dimensionally to lie along the shape of the human body. When knitting the knit pants 1, the tubular leg portions 4, 5 are generally knitted independently, and such leg portions 4, 5 are joined so that the gore is formed at the position of the crotch portion 3 of the leg portions 4, 5 to knit the rise 2, which is one large tubular knitted fabric. In the present embodiment, on the other hand, knitting is started from the upper end of the rise 2, and after the rise 2 is knitted up to the position of the crotch portion 3, the two independent leg portions 4, 5 continuing to the rise 2 are knitted according to the knitting process shown in Fig. 2.

**[0018]** Fig. 2 is a knitting process diagram when the leg portions 4, 5 are knitted from the vicinity of the crotch portion 3 at the rise 2 of the knit pants 1. In Fig. 2, "S + number" at the left column indicates the number of the knitting process, the drawing in the middle column indicates the held state of a stitch or a pick-up stitch in the needle bed, an arrow in an up and down direction in the right column indicates transfer between opposing needle beds, and an arrow in a left and right direction indicates the knitting direction. Furthermore, FB in Fig. 2 indicates the front needle bed, BB indicates the back needle bed, V indicates the yarn feeder, alphabets A to Z, A', and B' indicate the positions of the knitting needles of the needle beds, ○ indicates a stitch, and V indicates a pick-up stitch or a tuck stitch. Fig. 3 is a schematic view showing a knitting state of the knit pants 1 at the key of the knitting process shown in Fig. 2.

**[0019]** In S1 of Fig. 2, a state in which a final course of the rise 2 is knitted by circling knitting using knitting needles of every two needles is shown. This state cor-

responds to a state in which the rise 2 is knitted up to the position of the crotch portion 3 of the knit pants 1, which is one tubular knitted fabric (reference with Fig. 1), as shown in Fig. 3(A). The knitting of the leg portions 4, 5 is started according to the knitting process shown below from the state of S1.

**[0020]** In S2, a new stitch is formed on the knitting needles A, D of the FB and a tuck stitch is formed on the knitting needle G of the FB, on which the stitches of the rise 2 are held, while moving a yarn feeder 8 toward the right in the plane of drawing, and thereafter, a knitting yarn is fed alternately to the front and the back with respect to the knitting needles of the front and back needle beds (knitting needles K, N, Q, T of FB and knitting needles I, L, O, R of BB) on which the stitches of the rise 2 are not held to form a pick-up stitch (held stitch). Lastly, a tuck stitch is formed on the knitting needle V of the BB on which the stitch of the rise 2 is held (reference with Fig. 3(B)). The pick-up stitches alternately formed on the FB and the BB in S2 become the base when knitting the leg portions 4, 5 in the post-process. The knitting yarn fed from the yarn feeder 8 and bridged in a zigzag manner between the FB and the BB to form the pick-up stitches becomes a joining knitting yarn 6 for joining respective portions of the leg portions 4, 5 in the finished knit pants 1, to be described later.

**[0021]** Since the pick-up stitch formed in S2 is to be transferred in the post-process, it is preferable to form a pick-up stitch with a draw yarn in advance before S2 so that a new stitch (held stitch) is formed on such a pick-up stitch in S2. This is because the stitch can be more easily transferred than the pick-up stitch. In such a case, the draw yarn is removed from the knit pants 1 at the time point the knitting of the knit pants 1 is finished.

**[0022]** In S3, the pick-up stitches formed on the knitting needles R, O, L, I of the BB in S2 are transferred to the knitting needles R, O, L, I of the opposing FB. In S4, the left leg portion 4 starts to be knitted by circling knitting of moving the yarn feeder 8 toward the left in the plane of drawing, and then toward the right in the plane of drawing and toward the left in the plane of drawing. In such circling knitting, a new stitch is formed on the knitting needles (knitting needles I, L, O, R of FB) on which the transferred pick-up stitches are held, the knitting needles (knitting needles A, D, G of FB) on the left side in the plane of drawing (one end side in the knitting width direction) than the above knitting needles and on which the stitches of the rise 2 are held, and the knitting needles (knitting needles A, D, G, J, M, P, S of BB) at positions substantially facing the knitting needles of the FB and on which the stitches of the rise 2 are held.

**[0023]** In S5, the stitches held on the knitting needles I, L, O, R of the FB formed in S4 are transferred to the knitting needles I, L, O, R of the opposing BB, and then the pick-up stitches held on the knitting needles K, N, Q, T of the FB formed in S2 are transferred to the knitting needles K, N, Q, T of the opposing BB to prepare to start knitting the right leg portion 5. In S6, the right leg portion

5 starts to be knitted by the circling knitting of introducing a new yarn feeder 9 from the right in the plane of drawing and reciprocating such a yarn feeder 9 (reference with Fig. 3(C)). In such circling knitting, a new stitch is formed on the knitting needles (knitting needles K, N, Q, T of BB) on which the pick-up stitch transferred to the BB is held, the knitting needles (knitting needles V, Y, B' of BB) on the right side in the plane of drawing (other end side in the knitting width direction) than the above knitting needles and on which the stitches of the rise 2 are held, and the knitting needles (knitting needles J, M, P, S, V, Y, B' of FB) at positions substantially facing the knitting needles of the BB and on which the stitches of the rise 2 are held.

**[0024]** The stitches of the FB formed in S4 are transferred to the opposing BB in S5 because if the knitting yarn bridging between the front and back needle beds exists within a knitting region of the right leg portion 5 to knit in S6, such a knitting yarn tangles with the knitting yarn for configuring the right leg portion 5.

**[0025]** In S7, a state in which the stitches held on the knitting needles K, N, Q, T of the BB formed in S6 are transferred to the knitting needles K, N, Q, T of the opposing FB is shown. As shown in S7, the left leg portion 4 and the right leg portion 5 continuing to the rise 2 start to be knitted completely independently.

**[0026]** Thereafter, the number of knitting courses of the leg portions 4, 5 is increased to complete the leg portions 4, 5 (reference with Fig. 3(D)). In this case, when knitting one of the leg portions 4, 5 similar to the knitting shown in S3 to S5, the knitting yarn for knitting the relevant leg portion and the knitting yarn for knitting the other leg portion are to be prevented from tangling. For example, when knitting the right leg portion 5, the stitches to be overlapped in the knitting region of the right leg portion 5 of the stitches of the left leg portion 4 are transferred to the BB, so that the knitting yarn for configuring the right leg portion 5 and the knitting yarn for configuring the left leg portion 4 do not tangle. The BB to which the stitches of the left leg portion 4 are to be transferred is the needle bed to which the left leg portion 4 was transferred in S5 when starting to knit the right leg portion 5 in S6. The left leg portion 4 and the right leg portion 5 are preferably alternately knitted by 1 to 5 courses.

**[0027]** The positions where the stitches of the leg portions 4, 5 are held are preferably separated gradually in the left and right direction of the plane of drawing so that the knitting regions of the leg portions 4, 5 do not overlap in the knitting width direction in the process of knitting the leg portions 4, 5. When knitting the knit pants 1 so that the diameter of the leg portions 4, 5 gradually becomes smaller, the knitting regions of the leg portions 4, 5 can be prevented from overlapping by gradually narrowing the knitting widths of the leg portions 4, 5.

**[0028]** In the knit pants 1 obtained through the knitting process described above, the joining knitting yarn 6 alternatively tangles with the stitch group of one part in the first knitting course of the left leg portion 4 and the stitch

group of one part in the first knitting course of the right leg portion 5 to connect the stitch groups, and as shown in Fig. 4, which is a partially enlarged loop diagram of the crotch portion 3 of the knit pants 1, the leg portions 4, 5 are joined with each other by the joining knitting yarn 6 with the gore being formed at the position of the crotch where the leg portions 4, 5 of the knit pants 1 are branched. Since the joining knitting yarn 6 connects the leg portions 4, 5 so that the gore is formed at the position of the crotch without forming the double stitch, the portion of connection barely stand out in the knit pants 1 and the stretchability of the position of the crotch is not affected by such a connection. Both ends sides of the joining knitting yarn 6 are respectively connected to the rise 2 and the left leg portion 4 (see S2 to S4 of Fig. 2), and hence will not detach from the knit pants 1 and the joining of the leg portions 4, 5 can be securely held by the joining knitting yarn 6.

**[0029]** The embodiment of the present invention is not limited to the knitting of the knit pants described above. Modifications can be appropriately made without departing from the scope of the gist of the invention. For example, the knitting method of a tubular knitted fabric of the present invention may be applied to the knitting of sweater, socks, or gloves. The knitting of the sweater and the knitting of the socks will be briefly described as representative examples with reference to Fig. 5 and Fig. 6.

**[0030]** When knitting a sweater (tubular knitted fabric) 10 shown in Fig. 5(A), an integrated tubular portion 101 corresponding from a neck hole of the sweater 10 to the armpit (Before A.H.) shown with a chain dashed line is knitted from the neck hole side using the yarn feeder 8 (see Fig. 5(B)). A pick-up stitch is alternately formed in the front and back needle beds as shown in S2 of Fig. 2 within the knitting width of the integrated tubular portion 101 (see Fig. 5(B)). With such a pick-up stitch as the base, and adding the yarn feeder 9 in addition to the yarn feeder 8, a left sleeve 12 and a tubular portion 15, which are two independent branched tubular portions start to be knitted (see Fig. 5(C)). Furthermore, a pick-up stitch is alternately formed in the front and back needle beds within the knitting width of the tubular portion 15 (see Fig. 5(C)), and with such a pick-up stitch as the base, and adding the yarn feeder 7 in addition to the yarn feeder 9, a body 11 and a right sleeve 13, which are two independent branched tubular portions start to be knitted (see Fig. 5(D)). Thereafter, as shown in Fig. 5(E), the knitting of the body 11 and the sleeves 12, 13 is advanced to knit the sweater 10 in which the gore is formed at the position of the crotch of the body 11 and the sleeves 12, 13. The three branched tubular portions, the body 11, the left sleeve 12 and the right sleeve 13 may be formed all at once from the integrated tubular portion 101.

**[0031]** When knitting a sock (tubular knitted fabric) 20 shown in Fig. 6(A), a five-toe body 205 which is an integrated tubular portion is knitted from the opening of the sock 20. Then, a pick-up stitch is alternately formed in the front and back needle beds within the knitting width

of the five-toe body 205 (see Fig. 6(B)), and with such a pick-up stitch as the base, a four-toe body 204 and a tubular toe portion 25 for a little toe, which are two independent branched tubular portions, are knitted (see Fig. 6(C)). After the four-toe body 204 and the tubular toe portion 25 for the little toe are knitted for a predetermined number of courses, the four-toe body 204 is defined as a new integrated tubular portion, and a pick-up stitch is alternately formed in the front and back needle beds within the knitting width of the integrated tubular portion (see Fig. 6(D)). With such a pick-up stitch as the base, a three-toe body 203 and a tubular toe portion 24 for a fourth toe, which are two independent branched tubular portions, are knitted (see Fig. 6(E)). Thereafter, the three-toe body 203 is defined as a new integrated tubular portion, and a two-toe body 202 and a tubular toe portion 23 for a third toe are knitted. Moreover, such two-toe body 202 is defined as a new integrated tubular portion and a tubular toe portion 21 for a large toe and a tubular toe portion 22 for a second toe are knitted, so that the sock 20 in which the gore is formed at the position of the crotch of each of the tubular toe portions 21 to 25 can be knitted. The five tubular toe portions 21 to 25 may be formed all at once from the five-toe body 205.

#### DESCRIPTION OF SYMBOLS

**[0032]** A to Z, A', B' knitting needle  
 FB front needle bed BB back needle bed  
 1 knit pants (tubular knitted fabric)  
 2 rise (integrated tubular portion) 3 crotch portion 4 left leg portion (branched tubular portion) 5 right leg portion (branched tubular portion) 6 joining knitting yarn 7, 8, 9 yarn feeder 10 sweater (tubular knitted fabric)  
 11 body 12 left sleeve 13 right sleeve 15 tubular portion 101 integrated tubular portion 20 sock (tubular knitted fabric)  
 21 to 25 tubular toe portion 202 two-toe body 203 three-toe body 204 four-toe body 205 five-toe body

#### Claims

1. A knitting method of a tubular knitted fabric (1) for knitting a tubular knitted fabric (1) including an integrated tubular portion (2) and a plurality of branched tubular portions (4,5) which are continuously formed in a wale direction of the integrated tubular portion (2) and which are independent from each other using a flat knitting machine having at least a pair of front and back needle beds (FB, BB) and capable of transferring a stitch held on a knitting needle of the needle bed to another knitting needle, the method comprising:

step  $\alpha$  of knitting the integrated tubular portion (2);  
 step  $\beta$  of forming a plurality of held stitches held

on the knitting needle by feeding a knitting yarn alternately to the front and the back with respect to knitting needles of the front and back needle beds (FB, BB) on which stitches of the integrated tubular portion (2) are not held, within a knitting width of the integrated tubular portion (2);  
 step  $\gamma$  of transferring the held stitches held on the knitting needles of one needle bed of the held stitches formed on the knitting needle in step  $\beta$  to the knitting needles of the other needle bed, performing knitting using some of the knitting needles within a knitting width of the integrated tubular portion (2) including the knitting needles on which the transferred held stitches are held, and starting the knitting of one of the branched tubular portions (4) following the integrated tubular portion (2);  
 step  $\delta$  of transferring the stitches, which are held on the knitting needles of the other needle bed and in a formed range of the held stitches formed in step  $\beta$ , of the stitches knitted in step  $\gamma$  to the knitting needles of the one needle bed; and  
 step  $\epsilon$  of transferring the held stitches held on the knitting needles of the other needle bed, which is not the target of transfer in step  $\gamma$ , of the held stitches formed on the knitting needle in step  $\beta$  to the knitting needle of the one needle bed, performing knitting using some of the knitting needles within a knitting width of the integrated tubular portion (2) including the knitting needles on which the transferred held stitches are held, and starting the knitting of another branched tubular portion (5) adjacent to the branched tubular portion (4) which knitting started in step  $\gamma$ .

2. The knitting method of a tubular knitted fabric (1) according to claim 1, wherein  
 in a process of increasing number of knitting courses of one branched tubular portion (4) which knitting started in step  $\gamma$  and number of knitting courses of another branched tubular portion (5) which knitting started in step  $\epsilon$ ,  
 each branched tubular portion (4,(5)) is knitted alternately by 1 to 5 courses, and  
 when knitting each branched tubular portion (4,(5)), the stitches of the other branched tubular portion (5, (4)) overlapping a knitting region of the branched tubular portion (4,(5)) are held clustered on one of the front or back needle bed (FB, BB) not to inhibit the knitting of the branched tubular portion(4,(5)).
3. The knitting method of a tubular knitted fabric (1) according to claim 1 or 2, wherein  
 in a process of increasing number of knitting courses of one branched tubular portion (4) which knitting started in step  $\gamma$  and number of knitting courses of another branched tubular portion (5) which knitting

started in step  $\epsilon$ ,  
 positions where the stitches of the branched tubular  
 portions (4,5) in the front and back needle beds (FB,  
 BB) are held are spaced apart in the knitting width  
 direction so that the knitting regions of the branched  
 tubular portions (4,5) do not overlap in the knitting  
 width direction. 5

4. A tubular knitted fabric (1) knitted using a flat knitting  
 machine having at least a pair of front and back nee- 10  
 dle beds (FB, BB) and capable of transferring a stitch  
 held on a knitting needle of the needle bed to another  
 knitting needle, the tubular knitted fabric (1) compris-  
 ing: 15

an integrated tubular portion (2), and  
 a plurality of branched tubular portions (4,5)  
 which are continuously formed in a wale direc-  
 tion of the integrated tubular portion (2) and  
 which are independent from each other, wherein 20  
 a knitting course is increased from the integrated  
 tubular portion (2) side toward the branched tu-  
 bular portion (4,5) side; and  
 a joining knitting yarn (6) that alternately tangles 25  
 with a stitch group of one part in a first knitting  
 course of one branched tubular portion (4) and  
 a stitch group of one part in a first knitting course  
 of another branched portion (5) at a position of  
 a crotch where two adjacent branched tubular  
 portions (4,5) are branched to connect the stitch  
 groups is provided. 30

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Fig. 1

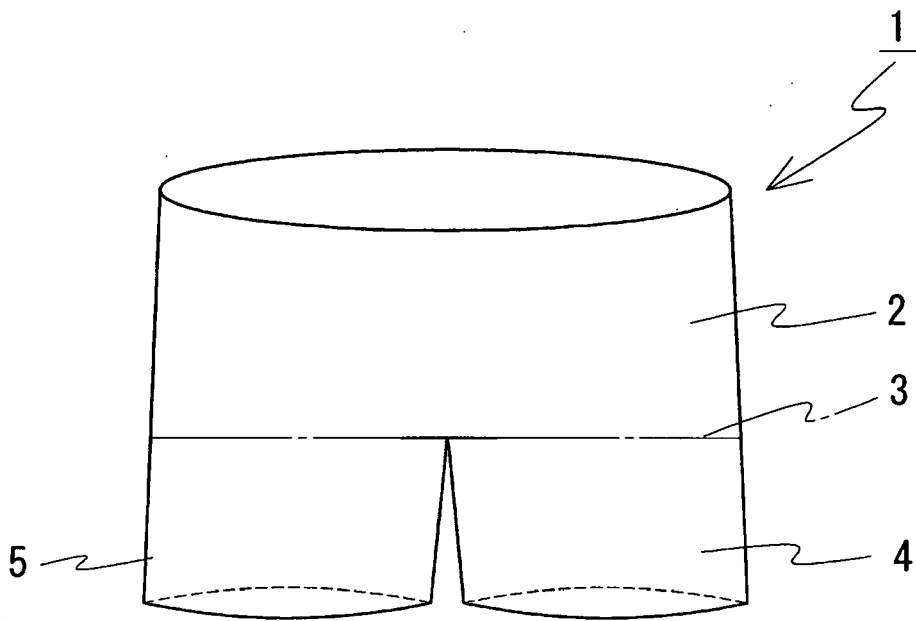


Fig. 2

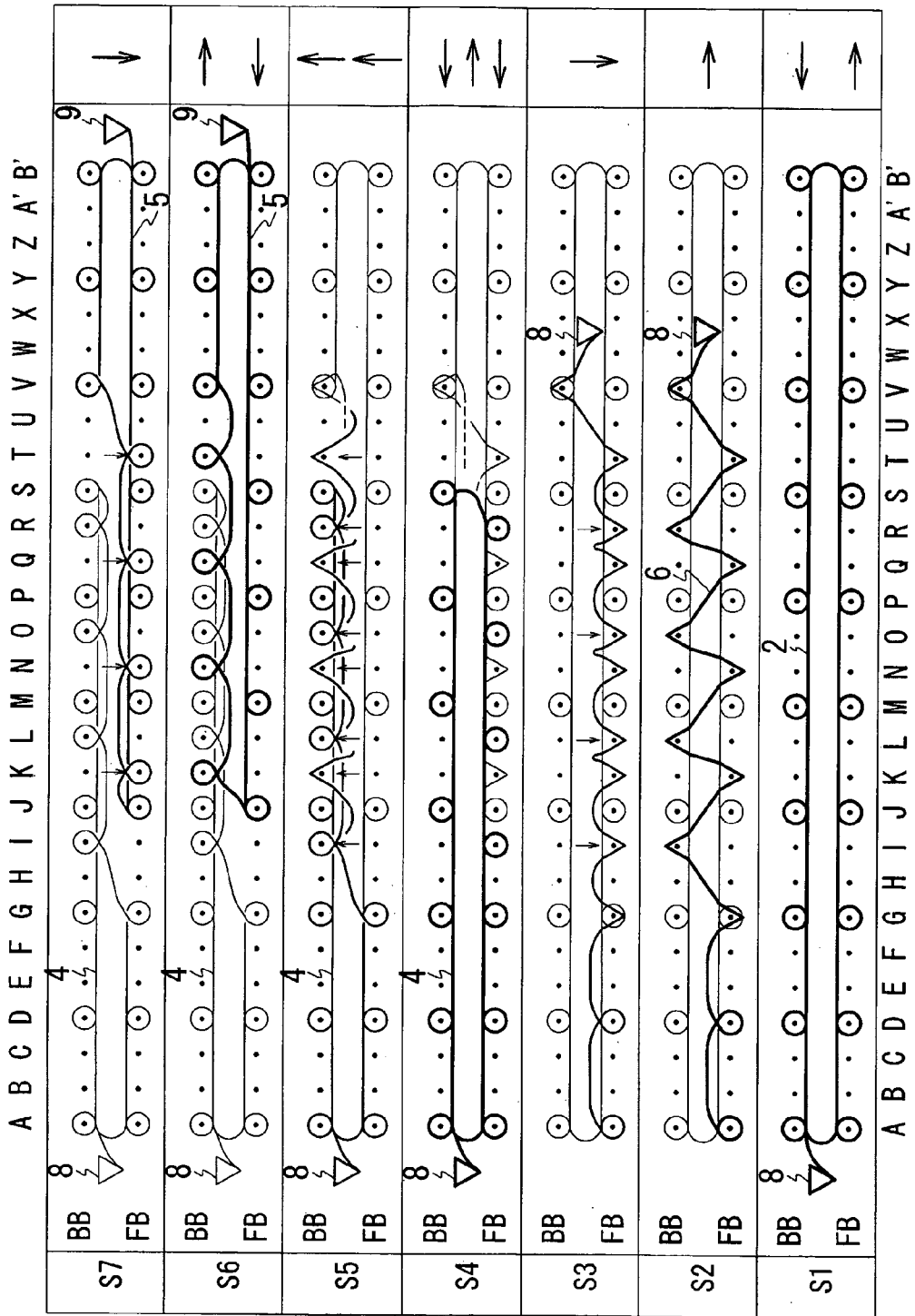


Fig. 3

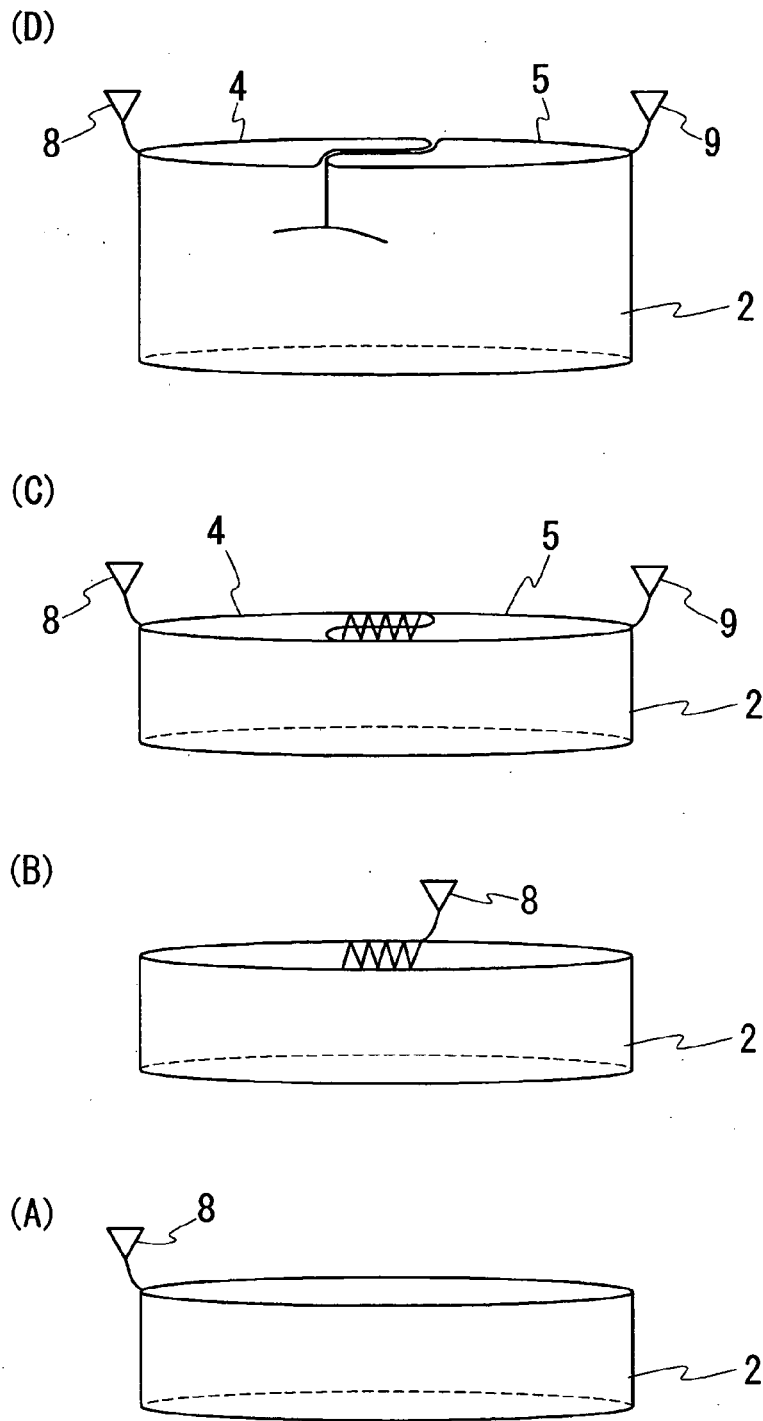


Fig. 4

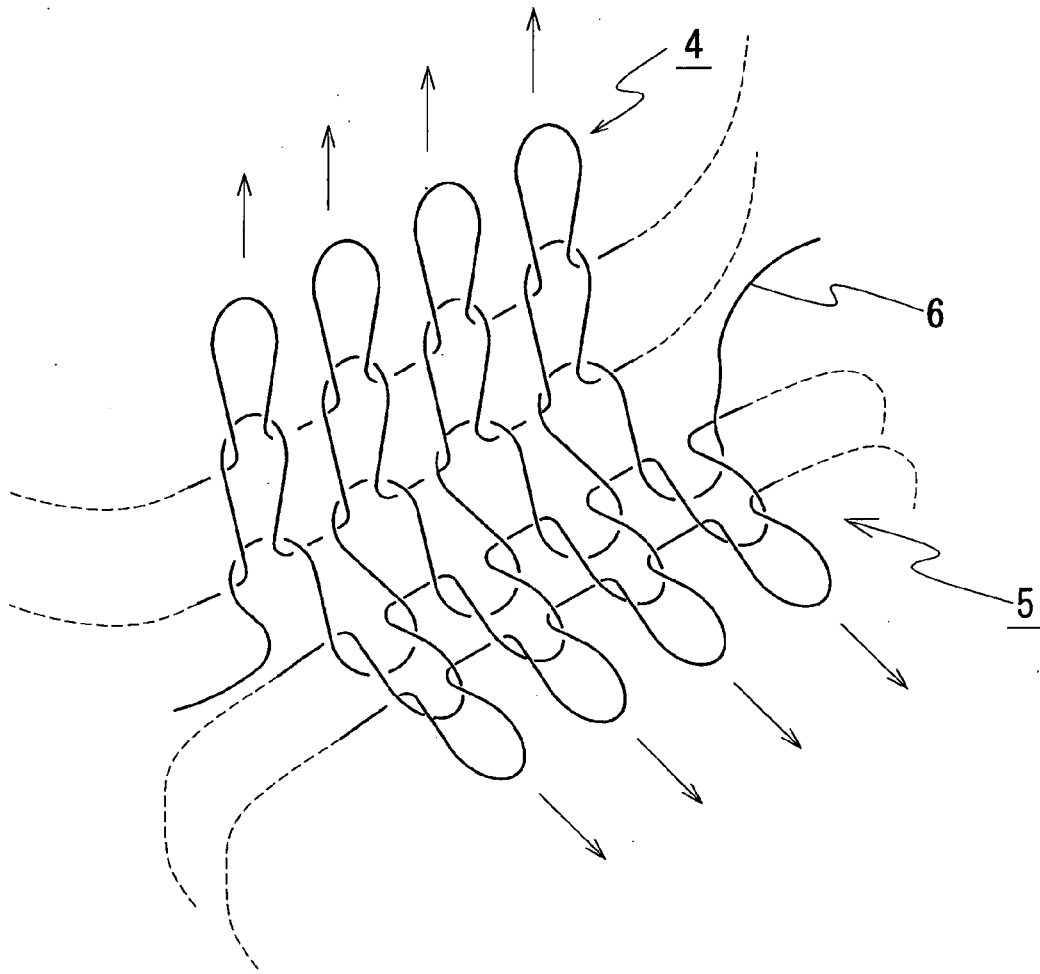


Fig. 5

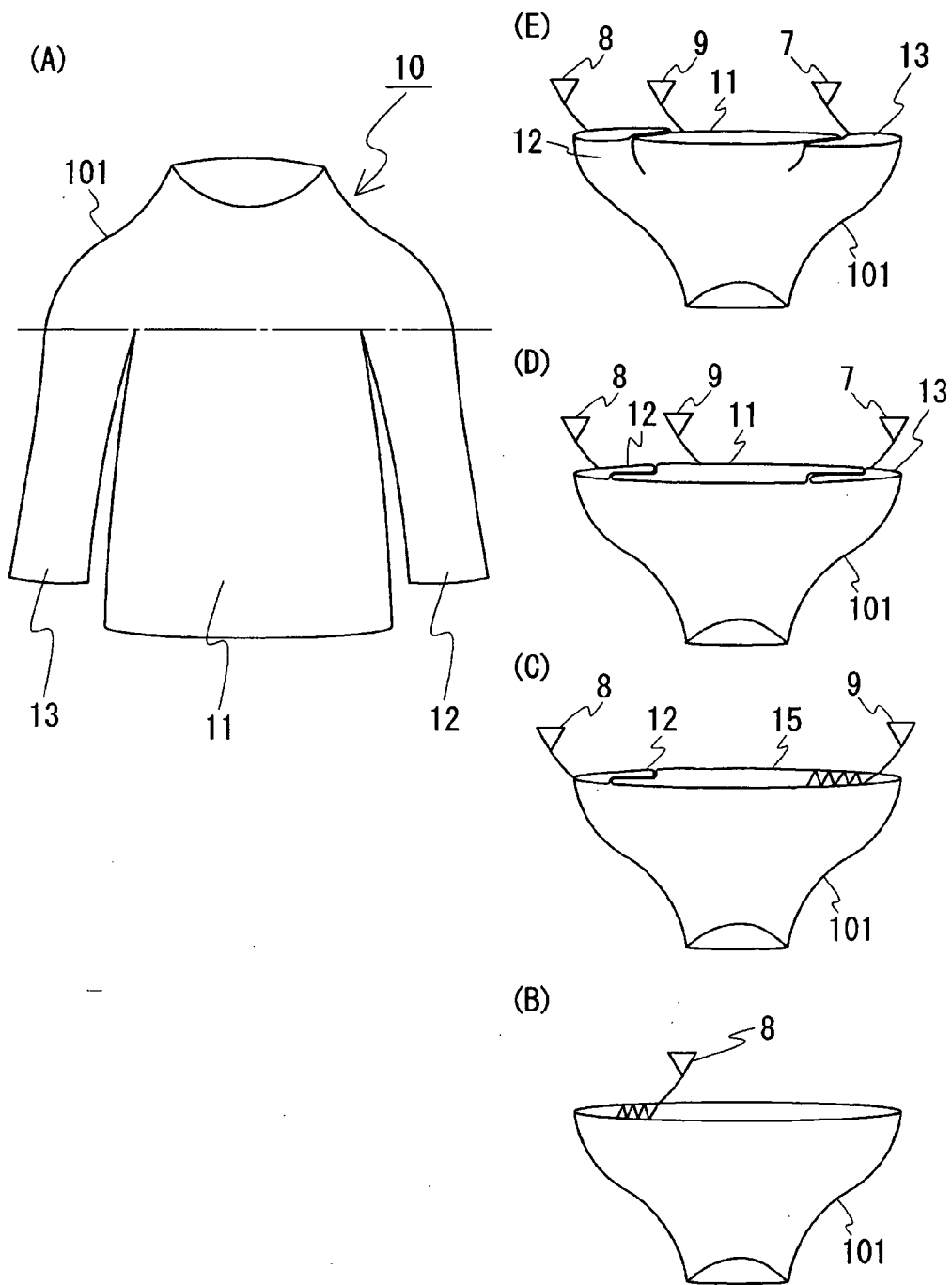
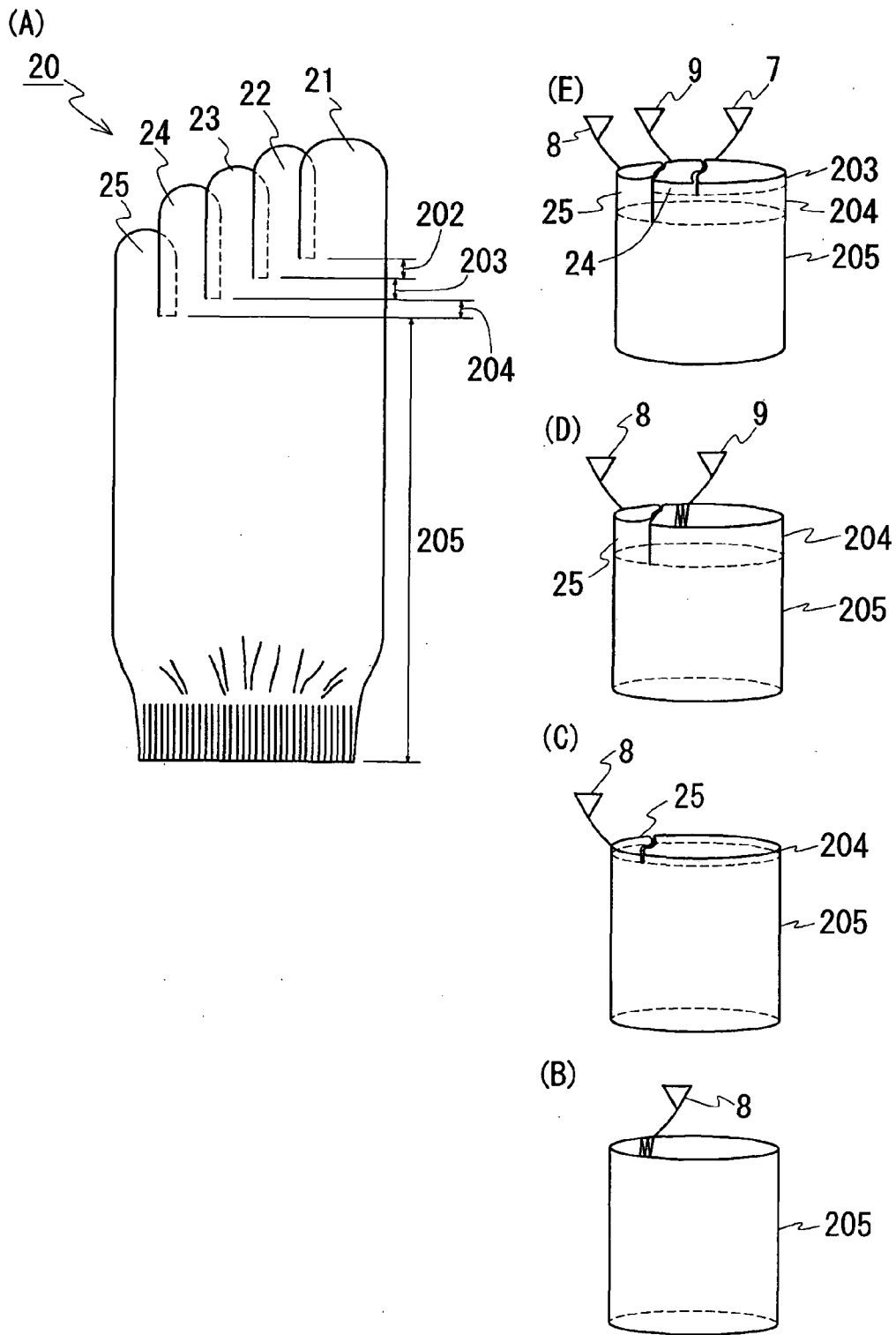


Fig. 6



**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- JP 3887408 B [0004]