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(54) **TOE CLOSING METHOD AND STRUCTURE**

(57) A toe closing method for closing a toe end (110) with first and second circumferential portions (10, 20) includes the steps of: folding the first circumferential portion (10) to superimpose over the second circumferential portion (20) such that the toe end (110) is formed with opposed first and second end points (130, 140); knitting a stitching thread (T) by threading the same through the loops (120) of the superimposed circumferential portions

(10, 20) to form a first loose thread (31) and an initial stitch segment (30); continuously knitting the thread (T) around the superimposed circumferential portions (10, 20) until the second end point (140) is reached to form a joining segment (40); and continuously knitting the thread (T) around a part of the joining segment (40) to form at least one tail portion (51, 52) and a second loose thread (53).

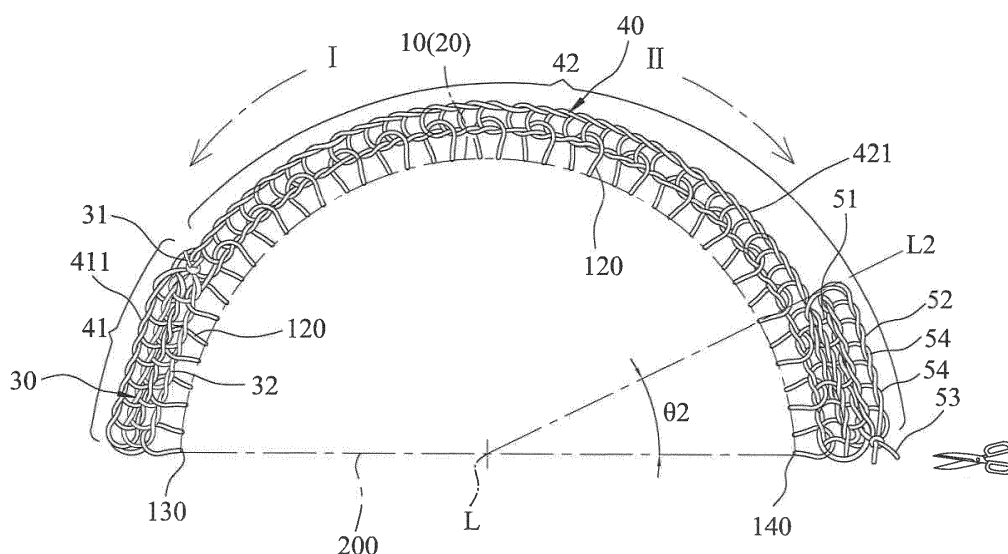


FIG.6

Description

[0001] The disclosure relates to a hosiery item, more particularly to a toe closing method and structure for closing a toe end of a hosiery item.

[0002] In Taiwanese Patent No. M476149, there is disclosed a toe closing apparatus for closing a toe end of a tubular hosiery body knitted by a knitting machine. The toe closing apparatus includes a stitching device, a transfer unit and a rotary control unit. The transfer unit is used for transferring the hosiery body from the knitting machine to the stitching device. Through cooperation of the stitching device and the rotary control unit, a sewing needle can be actuated to execute a sewing operation on the toe end of the hosiery body to close the same. The overall structure is simple, and the manufacturing and assembling processes are easy. Moreover, the stitching device includes a main body; a fixed reed fixed on the bottom of the main body; a movable reed pivoted to the fixed reed; a main drive assembly that drives the movable reed to rotate relative to the fixed reed between a juxtaposed position, where the movable reed is disposed side by side with the fixed reed in a same plane, and a stacked position, where the movable reed is stacked below the fixed reed; and a sewing needle for performing a stitching operation when the movable reed is in the stacked position.

[0003] Although the aforesaid toe closing apparatus can achieve its intended purpose, as shown in Figure 1, after the toe end 1 of the hosiery body is closed, loose threads 2 are formed on two opposite sides of the toe end 1. If the loose threads 2 are too long, they can cause discomfort to the wearer. If the loose threads 2 are too short, the stitches may become loose, thereby causing damage to the toe end. Hence, the hosiery item becomes a defective product.

[0004] Therefore, an object of this disclosure is to provide a toe closing method and structure that can fix loose threads on a hosiery body to ensure comfort wear and that can reduce defective products.

[0005] According to one aspect of this disclosure, a toe closing method is provided for closing a toe end of a tubular hosiery body that extends around a longitudinal axis. The toe end includes first and second circumferential portions, and a plurality of loops formed on the first and second circumferential portions and surrounding the longitudinal axis. The first and second circumferential portions are respectively located on two opposite sides of a diametrical axis of the tubular hosiery body which is perpendicular to the longitudinal axis. The loops of the first circumferential portion correspond in number to the loops of the second circumferential portion. The toe closing method comprises the steps of: (A) folding the first circumferential portion along the diametrical axis to superimpose the same over the second circumferential portion such that the loops of the first circumferential portion are respectively aligned with the loops of the second circumferential portion and that the toe end is placed in a

closed state and is formed with a first end point at one end of the diametrical axis and a second end point at the other end of the diametrical axis diametrically opposite to the first end point; (B) knitting a stitching thread by threading the stitching thread through the loops of the superimposed first and second circumferential portions to form a first loose thread and an initial stitch segment, wherein the first loose thread is located between the first and second end points, an angular distance between the first loose thread and the first end point is smaller than that between the first loose thread and the second end point, and the initial stitch segment starts from the first loose thread and is formed by threading the stitching thread through the loops of the superimposed first and second circumferential portions along a first circumferential direction from the second end point toward the first end point until the first end point is reached; (C) continuously knitting the stitching thread from the first end point along a second circumferential direction opposite to the first circumferential direction and around the superimposed first and second circumferential portions until the second end point is reached to form a joining segment, the joining segment having a first section interlaced with the initial stitch segment, and a second section connected to the first section and interlaced with the loops of the superimposed first and second circumferential portions located between the initial stitch segment and the second end point; and (D) continuously knitting the stitching thread from the second end point and around a part of the joining segment to form at least one tail portion and a second loose thread connected to the at least one tail portion, the at least one tail portion being interlaced with the part of the joining segment, an angular distance between the second loose thread and the second end point being smaller than that between the second loose thread and the first end point.

[0006] According to another aspect of this disclosure, a toe closing structure is provided for closing a toe end of a tubular hosiery body which extends around a longitudinal axis. The toe end has a first end point, a second end point opposite to the first end point, a first circumferential portion extending from the first end point to the second end point, a second circumferential portion superimposed on the first circumferential portion, and a plurality of loops provided on the first and second circumferential portions. The loops of the first circumferential portion correspond in number to and are respectively aligned with the loops of the second circumferential portion. The toe closing structure comprises a first loose thread, an initial stitch segment, a joining segment, at least one tail portion and a second loose thread. The first loose thread is configured to be located between the first and second end points. An angular distance between the first loose thread and the first end point is smaller than an angular distance between the first loose thread and the second end point. The initial stitch segment includes a plurality of initial stitch loops configured to be interlaced with the loops of the superimposed first and second cir-

cumferential portions located between the first loose thread and the first end point. The joining segment includes a first section interlaced with the initial stitch segment, and a second section connected to the first section and configured to be interlaced with the loops of the superimposed first and second circumferential portions located between the first section and the second end point. The first section has a plurality of first loops interlaced with the initial stitch loops of the initial stitch segment. The second section has a plurality of second loops configured to be interlaced with the loops of the superimposed first and second circumferential portions located between the initial stitch segment and the second end point. The at least one tail portion is configured to be proximal to the second end point, is interlaced with a part of the joining segment, and includes a plurality of tail loops. The second loose thread is connected to the at least one tail portion. An angular distance between the second loose thread and the second end point is smaller than that between the second loose thread and the first end point.

[0007] Other features and advantages of the disclosure will become apparent in the following detailed description of the embodiments with reference to the accompanying drawings, of which:

Figure 1 illustrates loose threads formed on two opposite sides of a toe end of a hosiery body after it is closed using a toe closing apparatus disclosed in Taiwanese Patent No. M476149;

Figure 2 is a perspective view of a toe end of a tubular hosiery body to be closed using a toe closing method according to the first embodiment of the present disclosure;

Figure 3 is a view similar to Figure 1, but illustrating a first circumferential portion of the toe end being folded along a diametrical axis of the hosiery body to superimpose over a second circumferential portion thereof;

Figure 4 is a schematic diagram of the first embodiment, illustrating a stitching thread being threaded through loops of the superimposed first and second circumferential portions to form a first loose thread and an initial stitch segment;

Figure 5 is a schematic diagram of the first embodiment, illustrating the stitching thread being continuously knitted around the superimposed first and second circumferential portions to form a joining segment;

Figure 6 is a schematic diagram of the first embodiment, illustrating the stitching thread being continuously knitted around a part of the joining segment to form a tail portion and a second loose thread;

Figure 7 is a schematic diagram for illustrating a stitching path of the stitching thread of the first embodiment; and

Figure 8 is a schematic diagram of a toe closing method according to the second embodiment of the

present disclosure, illustrating the stitching thread being knitted around a part of the joining segment to form a tail portion and a second loose thread.

[0008] Before the present disclosure is described in greater detail with reference to the accompanying embodiments, it should be noted herein that like elements are denoted by the same reference numerals throughout the disclosure.

[0009] Referring to Figures 2 to 7, a toe closing method according to the first embodiment of the disclosure is provided for closing a toe end 110 of a tubular hosiery body 100 that extends around a longitudinal axis (L). The toe end 110 includes a first circumferential portion 10, a second circumferential portion 20, and a plurality of loops 120 formed on the first and second circumferential portions 10, 20 and surrounding the longitudinal axis (L). The first and second circumferential portions 10, 20 are respectively located on two opposite sides of a diametrical axis 200 of the tubular hosiery body 100 which is perpendicular to the longitudinal axis (L). The loops 120 of the first circumferential portion 10 correspond in number to the loops 120 of the second circumferential portion 20. The toe closing method comprises the following steps:

Step 1: folding the first circumferential portion 10 along the diametrical axis 200 to superimpose the same over the second circumferential portion 20 such that the loops 120 of the first circumferential portion 10 are respectively aligned with the loops 120 of the second circumferential portion 20 and that the toe end 110 is placed in a closed state, as shown in Figure 3. At this time, the toe end 110 is formed with a first end point 130 at one end of the diametrical axis 200 and a second end point 140 at the other end of the diametrical axis 200 diametrically opposite to the first end point 130.

Step 2: knitting a stitching thread (T) by threading the stitching thread (T) through a predetermined position of the loops 120 of the superimposed first and second circumferential portions 10, 20 to form a first loose thread 31 and an initial stitch segment 30, as shown in Figures 4 and 7. The first loose thread 31 is located between the first and second end points 130, 140. An angular distance between the first loose thread 31 and the first end point 130 is smaller than that between the first loose thread 31 and the second end point 140. The initial stitch segment 30 starts from the first loose thread 31 and is formed by threading the stitching thread (T) through the loops 120 of the superimposed first and second circumferential portions 10, 20 along a first circumferential direction (I), which extends from the second end point 140 toward the first end point 130, until the first end point 130 is reached. A first radial line (L1) extends from the longitudinal axis (L) and passes through one end of the initial stitch segment 30 which is distal from

the first end point 130. The first radial line (L1) and the diametrical axis 200 form a first included angle (θ_1) therebetween, which ranges from 5 degrees to 45 degrees. That is, the first included angle (θ_1) can be 45 degrees, 30 degrees, 20 degrees, 10 degrees or 5 degrees. The initial stitch segment 30 includes a plurality of initial stitch loops 32, preferably six.

Step 3: continuously knitting the stitching thread (T) from the first end point 130 along a second circumferential direction (II) opposite to the first circumferential direction (I) and around the loops 120 of the superimposed first and second circumferential portions 10, 20 until the second end point 140 is reached to form a joining segment 40, as shown in Figures 5 and 7. The joining segment 40 has a first section 41 interlaced with the initial stitch segment 30, and a second section 42 connected to the first section 41 and interlaced with the loops 120 of the superimposed first and second circumferential portions 10, 20 located between the first section 41 and the second end point 140.

Step 4: continuously knitting the stitching thread (T) from the second end point 140 and around a part of the joining segment 40 so as to form at least one tail portion and a second loose thread 53 connected to the tail portion, as shown in Figures 6 and 7. An angular distance between the second loose thread 53 and the second end point 140 is smaller than that between the second loose thread 53 and the first end point 130. In this embodiment, the at least one tail portion includes a first tail portion 51 and a second tail portion 52. The first tail portion 51 is formed by continuously knitting the stitching thread (T) along the first circumferential direction (I) from the second end point 140 and around the part of the joining segment 40. That is, the first tail portion 51 is interlaced with the part of the joining segment 40. The second tail portion 52 is formed by continuously knitting the stitching thread (T) along the second circumferential direction (II) from one end of the first tail portion 51, which is distal from the second end point 140, and around the first tail portion 51. The second tail portion 52 is interlaced with the first tail portion 51. A second radial line (L2) extends from the longitudinal axis (L) and passes through one ends of the first and second tail portions 51, 52 which are distal from the second end point 140. The second radial line (L2) and the diametrical axis 200 form a second included angle (θ_2) therebetween, which ranges from 5 degrees to 45 degrees. That is, the second included angle (θ_2) can be 45 degrees, 30 degrees, 20 degrees, 10 degrees or 5 degrees. In this embodiment, the second loose thread 53 is proximate to the diametrical axis 200 and the second end point 140. Each of the first and second tail portions 51, 52 has a plurality of tail loops 54, preferably six.

Step 5: cutting the second loose thread 53 using a cutting device, such as a scissor, as shown in Figure

6.

[0010] Therefore, by using the foregoing sequential steps, the purpose of closing the toe end 110 can be achieved. Further, by interlacing the initial stitch segment 30 and the first section 41 of the joining segment 40, and by interlacing the first tail portion 51 and the second section 42 of the joining segment 40, the first loose thread 31 is fixed to one side of the joining segment 40 at a position distal from the first end point 130, while the second loose thread 53 is fixed to the other opposite side of the joining segment 40 at a position proximate to the second end point 140. Through this configuration, the discomfort brought to the user due to long loose threads at two opposite sides of the toe end can be minimized. Hence, the purpose of providing comfort during wear of the hosiery body 100 can be achieved.

[0011] Referring to Figure 8, the second embodiment of the disclosure is shown to be generally identical to the first embodiment. Particularly, steps 1 to 4. The difference resides in that, in this embodiment, the at least one tail portion includes only one tail portion, that is, the tail portion 51. Further, in step 5, the tail portion 51 is interlaced with the part of the joining segment 40, and is formed by continuously threading the stitching thread (T) through the part of the joining segment 40 from the second end point 140 along the first circumferential direction (I) and around the part of the joining segment 40. The second loose thread 53 is connected to the tail portion 51 and is disposed at a position between the first and second end points 130, 140. In this embodiment, the second loose thread 53 corresponds in position with the first loose thread 31.

[0012] Referring back to Figure 6, a toe closing structure of the disclosure obtained from the foregoing sequential method is shown to comprise a first loose thread 31, an initial stitch segment 30, a joining segment 40, first and second tail portions 51, 52, and a second loose thread 53.

[0013] The first loose thread 31 is configured to be located between the first and second end points 130, 140. An angular distance between the first loose thread 31 and the first end point 130 is smaller than that between the first loose thread 31 and the second end point 140.

[0014] The initial stitch segment 30 includes a plurality of initial stitch loops 32 configured to be interlaced with the loops 120 of the superimposed first and second circumferential portions 10, 20 located between the first loose thread 31 and the first end point 130.

[0015] The joining segment 40 includes a first section 41 interlaced with the initial stitch segment 30, and a second section 42 connected to the first section 41 and configured to be interlaced with the loops 120 of the superimposed first and second circumferential portions 10, 20 located between the first section 41 and the second end point 140. The first section 41 has a plurality of first loops 411 interlaced with the initial stitch loops 32 of the initial stitch segment 30. The second section 42 has a plurality

of second loops 421 configured to be interlaced with the loops 120 of the superimposed first and second circumferential portions 10, 20 located between the first loose thread 31 and the second end point 140.

[0016] The first and second tail portions 51, 52 are configured to be proximal to the second end point 140. Each of the first and second tail portions 51, 52 includes a plurality of tail loops 54. The tail loops 54 of the first tail portion 51 are interlaced with the part of the joining segment 40. The tail loops 54 of the second tail portion 52 are interlaced with the tail loops 54 of the first tail portion 51 such that the second tail portion 52 extends around an outer side of the first tail portion 51.

[0017] The second loose thread 53 is connected to the second tail portion 52. An angular distance between the second loose thread 53 and the second end point 140 is smaller than that between the second loose thread 53 and the first end point 130.

[0018] It should be noted that the number of the tail portion may be one, that is, the tail portion 51, as shown in Figure 8. In this case, the second loose thread 53 corresponds in position with the first loose thread 31.

[0019] In sum, by using the toe closing method and structure of this disclosure, the issues of discomfort caused by long loose threads at two opposite sides of the toe end and the loosening of the stitches caused by cutting the loose threads too short can be resolved. Therefore, the object of this disclosure can be achieved.

Claims

1. A toe closing method for closing a toe end (110) of a tubular hosiery body (100) that extends around a longitudinal axis (L), the toe end (110) including a first circumferential portion (10), a second circumferential portion (20), and a plurality of loops (120) formed on the first and second circumferential portions (10, 20) and surrounding the longitudinal axis (L), the first and second circumferential portions (10, 20) being respectively located on two opposite sides of a diametrical axis (200) of the tubular hosiery body (100) which is perpendicular to the longitudinal axis (L), the loops (120) of the first circumferential portion (10) corresponding in number to the loops (120) of the second circumferential portion (20), said toe closing method comprising the steps of:

(A) folding the first circumferential portion (10) along the diametrical axis (200) to superimpose the same over the second circumferential portion (20) such that the loops (120) of the first circumferential portion (10) are respectively aligned with the loops (120) of the second circumferential portion (20) and that the toe end (110) is placed in a closed state and is formed with a first end point (130) at one end of the diametrical axis (200) and a second end point

(140) at the other end of the diametrical axis (200) diametrically opposite to the first end point (130);

(B) knitting a stitching thread (T) by threading the stitching thread (T) through the loops (120) of the superimposed first and second circumferential portions (10, 20) to form a first loose thread (31) and an initial stitch segment (30), wherein the first loose thread (31) is located between the first and second end points (130, 140), an angular distance between the first loose thread (31) and the first end point (130) is smaller than that between the first loose thread (31) and the second end point (140), and the initial stitch segment (30) starts from the first loose thread (31) and is formed by threading the stitching thread (T) through the loops (120) of the superimposed first and second circumferential portions (10, 20) along a first circumferential direction (I) from the second end point (140) toward the first end point (130) until the first end point (130) is reached;

(C) continuously knitting the stitching thread (T) from the first end point (130) along a second circumferential direction (II) opposite to the first circumferential direction (I) and around the superimposed first and second circumferential portions (10, 20) until the second end point (140) is reached to form a joining segment (40), the joining segment (40) having a first section (41) interlaced with the initial stitch segment (30), and a second section (42) connected to the first section (41) and interlaced with the loops (120) of the superimposed first and second circumferential portions (10, 20) located between the initial stitch segment (30) and the second end point (140); and

(D) continuously knitting the stitching thread (T) from the second end point (140) and around a part of the joining segment (40) to form at least one tail portion (51, 52) and a second loose thread (53) connected to the at least one tail portion (51, 52), the at least one tail portion (51, 52) being interlaced with the part of the joining segment (40), an angular distance between the second loose thread (53) and the second end point (140) being smaller than that between the second loose thread (53) and the first end point (130).

2. The toe closing method as claimed in Claim 1, wherein in step (D), the at least one tail portion includes a first tail portion (51) and a second tail portion (52), the first tail portion (51) being formed by continuously knitting the stitching thread (T) along the first circumferential direction (I) from the second end point (140) and around a part of the second section (42) of the joining segment (40), the second tail portion (53) being formed by continuously knitting the stitching

thread (T) along the second circumferential direction (II) from one end of the first tail portion (51), which is distal from the second end point (140), and around the first tail portion (51), the second tail portion (52) being interlaced with the first tail portion (51).

3. The toe closing method as claimed in Claim 1, wherein, in step (D), the at least one tail portion includes one tail portion (51), the tail portion (51) is interlaced with the part of the joining segment (40) and is formed by continuously threading the stitching thread (T) through the part of the joining segment (40) from the second end point (140) along the first circumferential direction (I) and around the part of the joining segment (40), and the second loose thread (53) is connected to the tail portion (51) and is disposed at a position between the first and second end points (130, 140).
4. The toe closing method as claimed in Claim 1, wherein, in step (B), a first radial line (L1) extends from the longitudinal axis (L) and passes through one end of the initial stitch segment (30) which is distal from the first end point (130), the first radial line (L1) and the diametrical axis (200) forming a first included angle (θ_1) therebetween, which ranges from 5 degrees to 45 degrees.
5. The toe closing method as claimed in Claim 4, wherein, in step (B), the initial stitch segment (30) includes six initial stitch loops (32).
6. The toe closing method as claimed in Claim 1, wherein in step (D), a second radial line (L2) extends from the longitudinal axis (L) and passes through one end of the at least one tail portion (51, 52) which is distal from the second end point (140), the second radial line (L2) and the diametrical axis (200) forming a second included angle (θ_2) therebetween, which ranges from 5 degrees to 45 degrees.
7. The toe closing method as claimed in Claim 1, wherein in step (D), the at least one tail portion (51, 52) includes six tail loops (54).
8. A toe closing structure for closing a toe end (110) of a tubular hosiery body (100) which extends around a longitudinal axis (L), the toe end (110) having a first end point (130), a second end point (140) opposite to the first end point (130), a first circumferential portion (10) extending from the first end point (130) to the second end point (140), a second circumferential portion (20) superimposed on the first circumferential portion (10), and a plurality of loops (120) provided on the first and second circumferential portions (10, 20), the loops (120) of the first circumferential portion (10) corresponding in number to and being respectively aligned with the loops (120) of the

second circumferential portion (20), said toe closing structure comprising:

a first loose thread (31) configured to be located between the first and second end points (130, 140), an angular distance between said first loose thread (31) and the first end point (130) being smaller than an angular distance between said first loose thread (31) and the second end point (140);
an initial stitch segment (30) including a plurality of initial stitch loops (32) configured to be interlaced with the loops (120) of the superimposed first and second circumferential portions (10, 20) located between said first loose thread (31) and the first end point (130);
a joining segment (40) including a first section (41) interlaced with said initial stitch segment (30), and a second section (42) connected to said first section (41) and configured to be interlaced with the loops (120) of the superimposed first and second circumferential portions (10, 20) located between said first section (41) and the second end point (140), said first section (41) having a plurality of first loops (411) interlaced with said initial stitch loops (32) of said initial stitch segment (30), said second section (42) having a plurality of second loops (421) configured to be interlaced with the loops (120) of the superimposed first and second circumferential portions (10, 20) located between said initial stitch segment (30) and the second end point (140);
at least one tail portion (51, 52) configured to be proximal to the second end point (140), interlaced with a part of said joining segment (40), and including a plurality of tail loops (54); and
a second loose thread (53) connected to said at least one tail portion (51, 52), an angular distance between said second loose thread (53) and the second end point (140) being smaller than that between said second loose thread (53) and the first end point (130).

9. The toe closing structure as claimed in Claim 8, wherein said at least one tail portion includes first and second tail portions (51, 52), said first tail portion (51) is interlaced with said joining segment (40), and said second tail portion (52) is interlaced with said first tail portion (51) and extends around an outer side of said first tail portion (51).

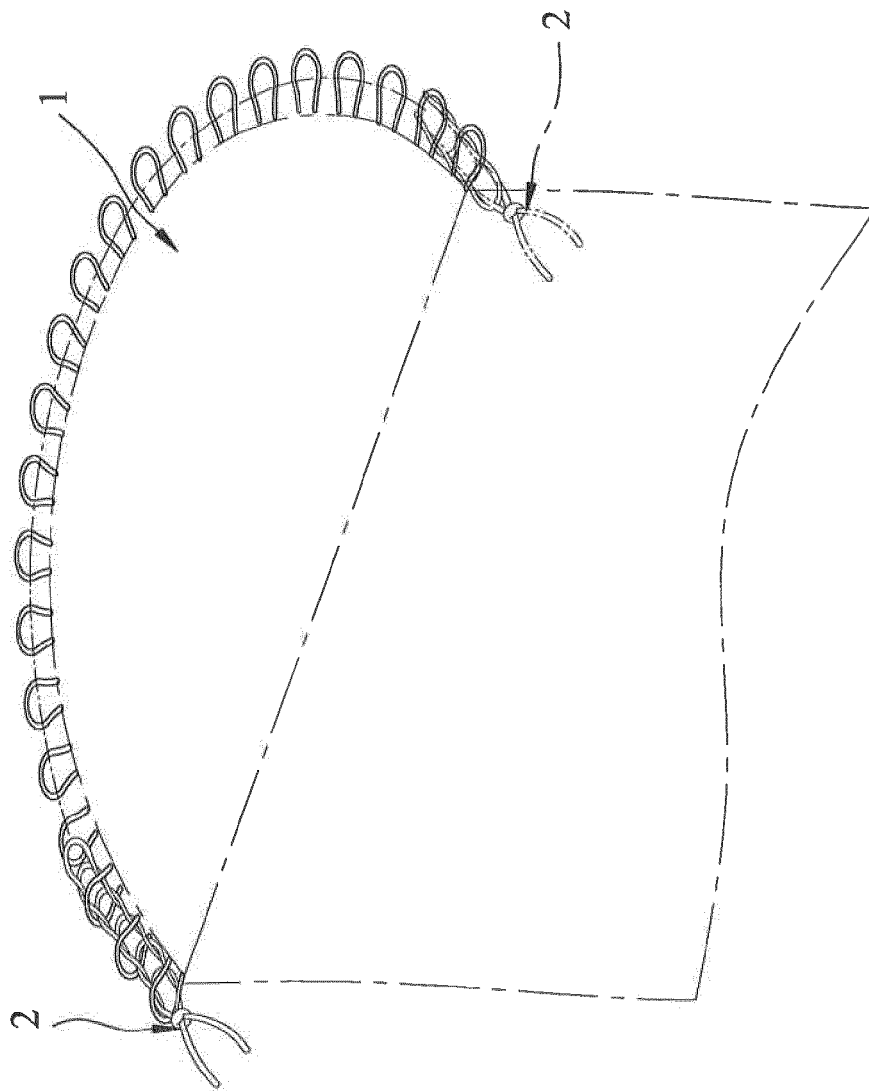


FIG. 1
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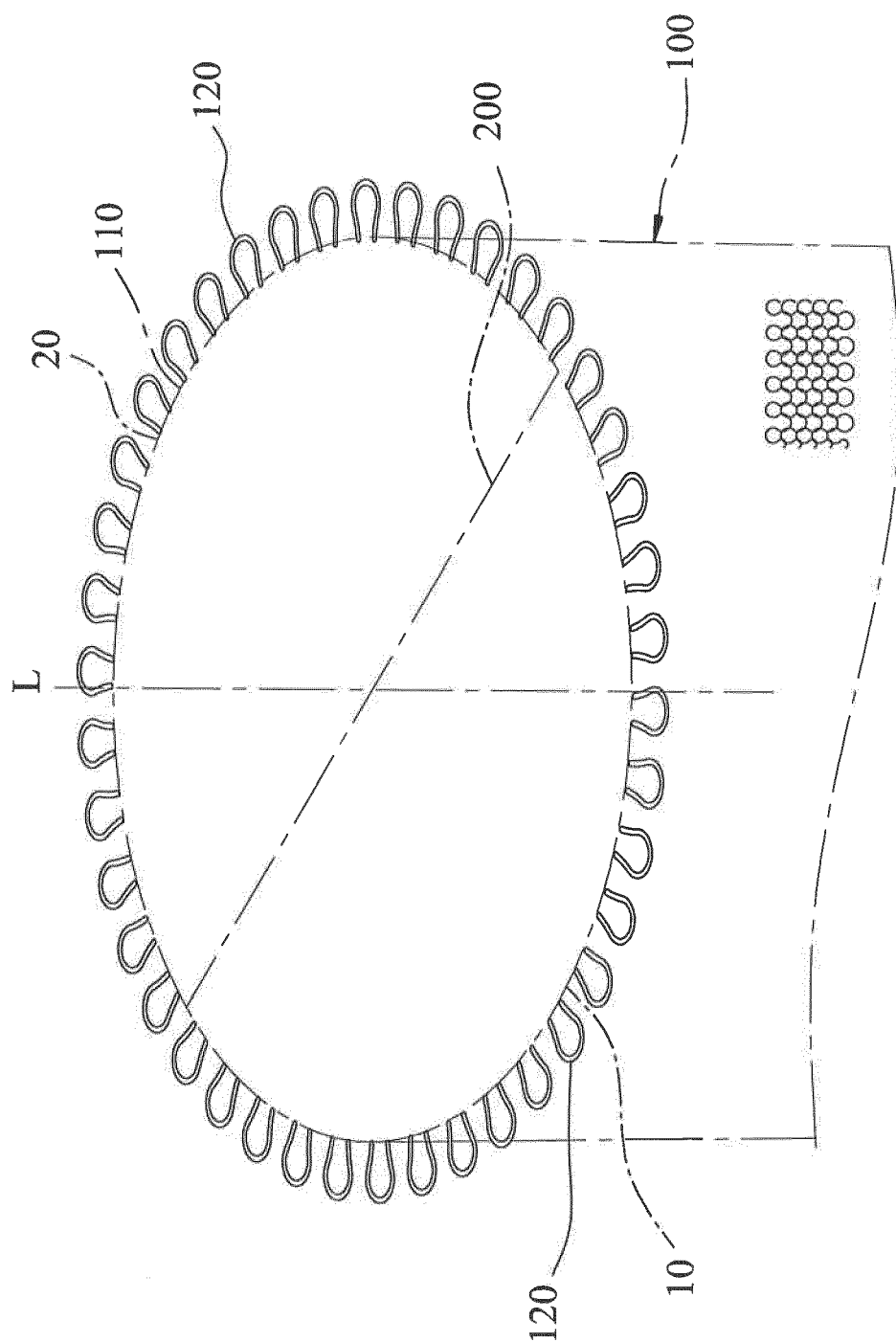


FIG. 2

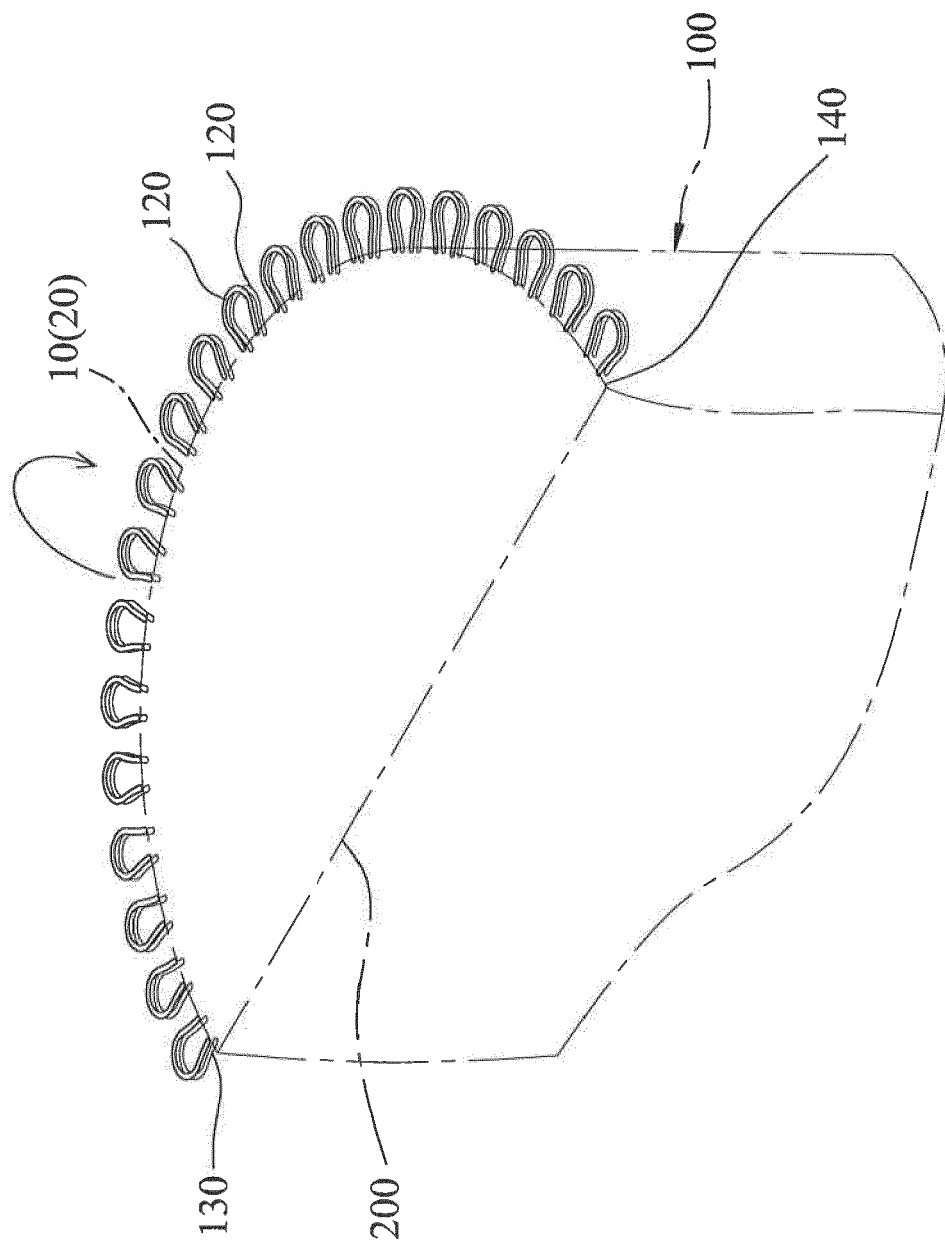


FIG.3

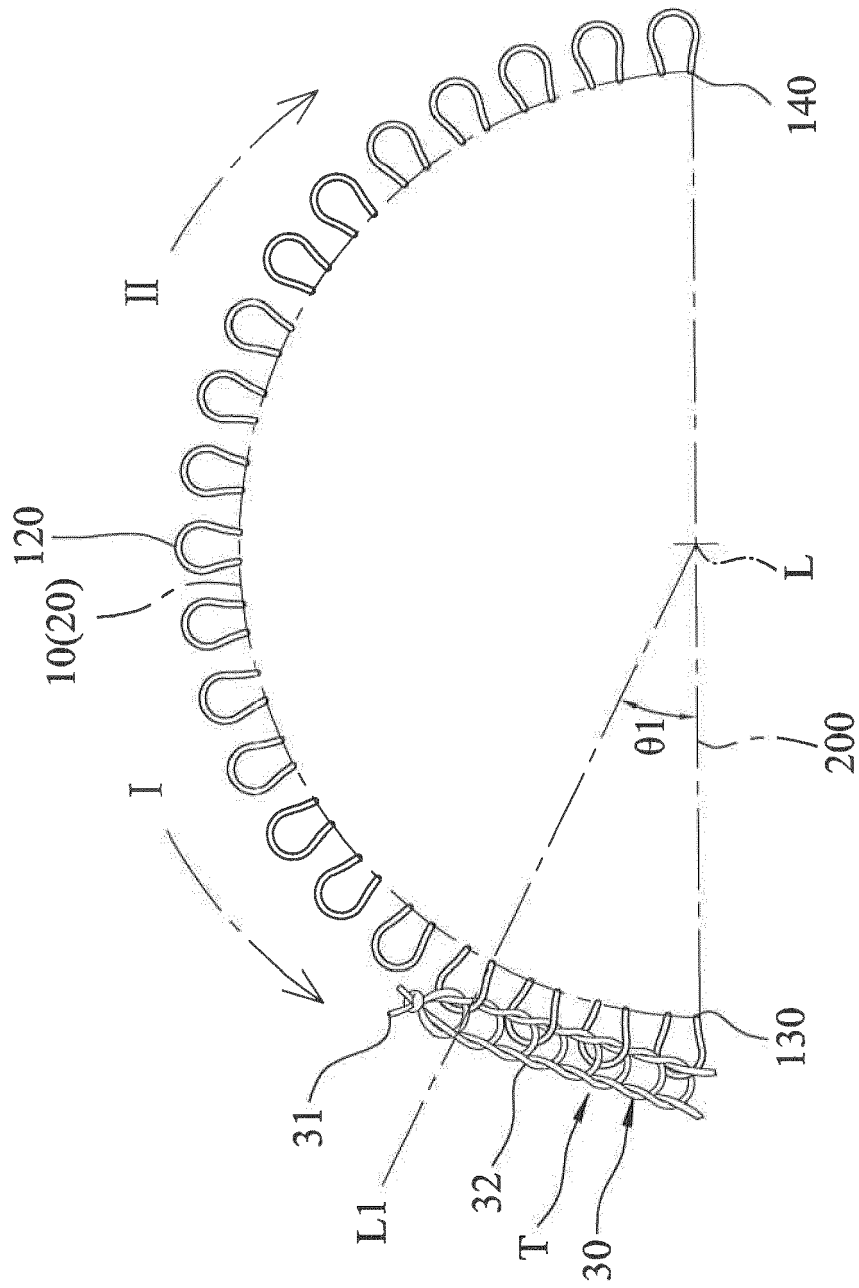


FIG. 4

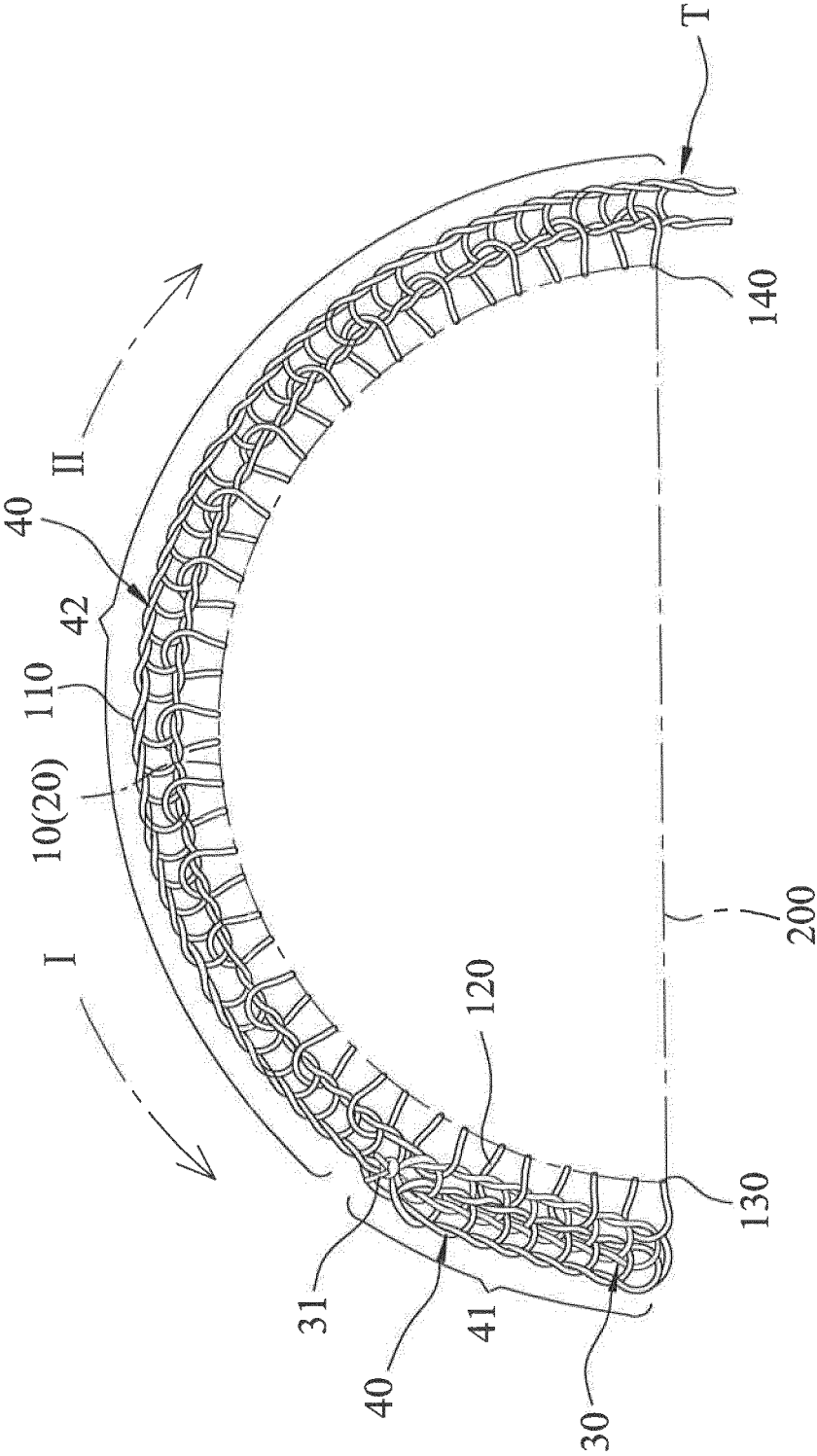


FIG.5

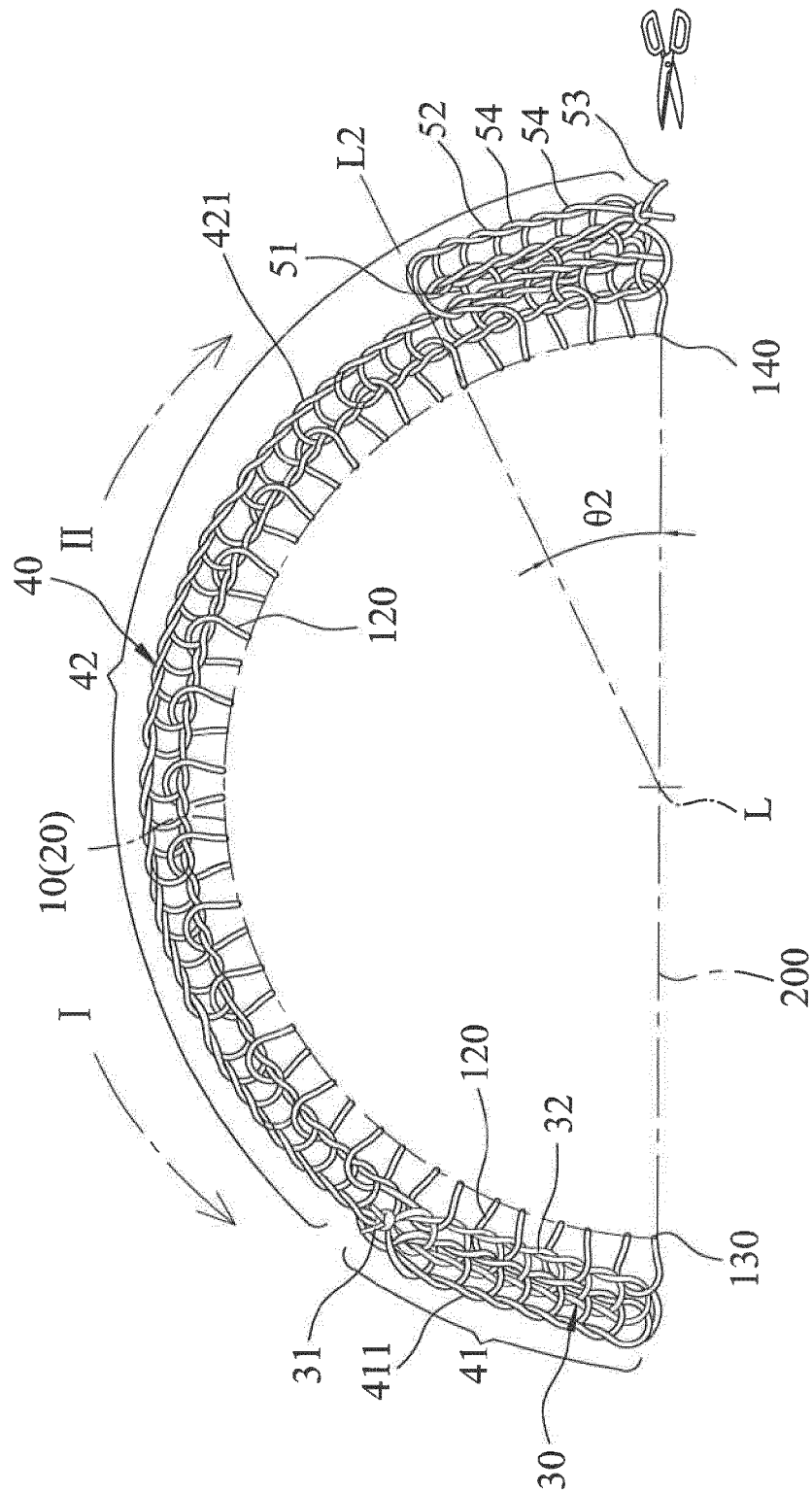


FIG.6

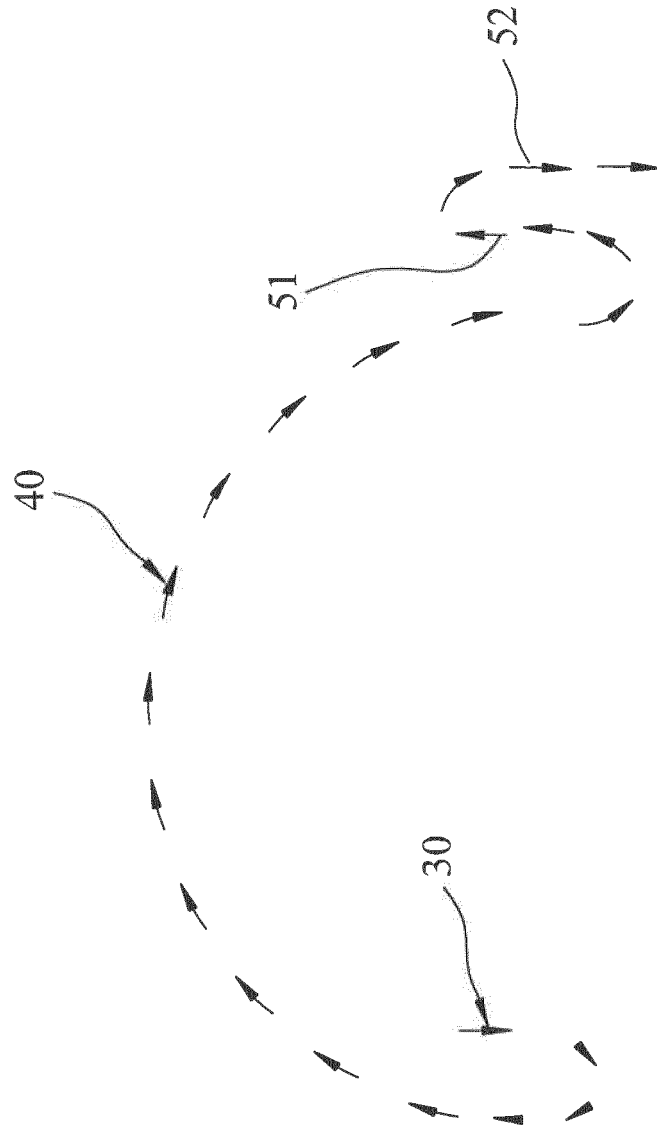


FIG. 7

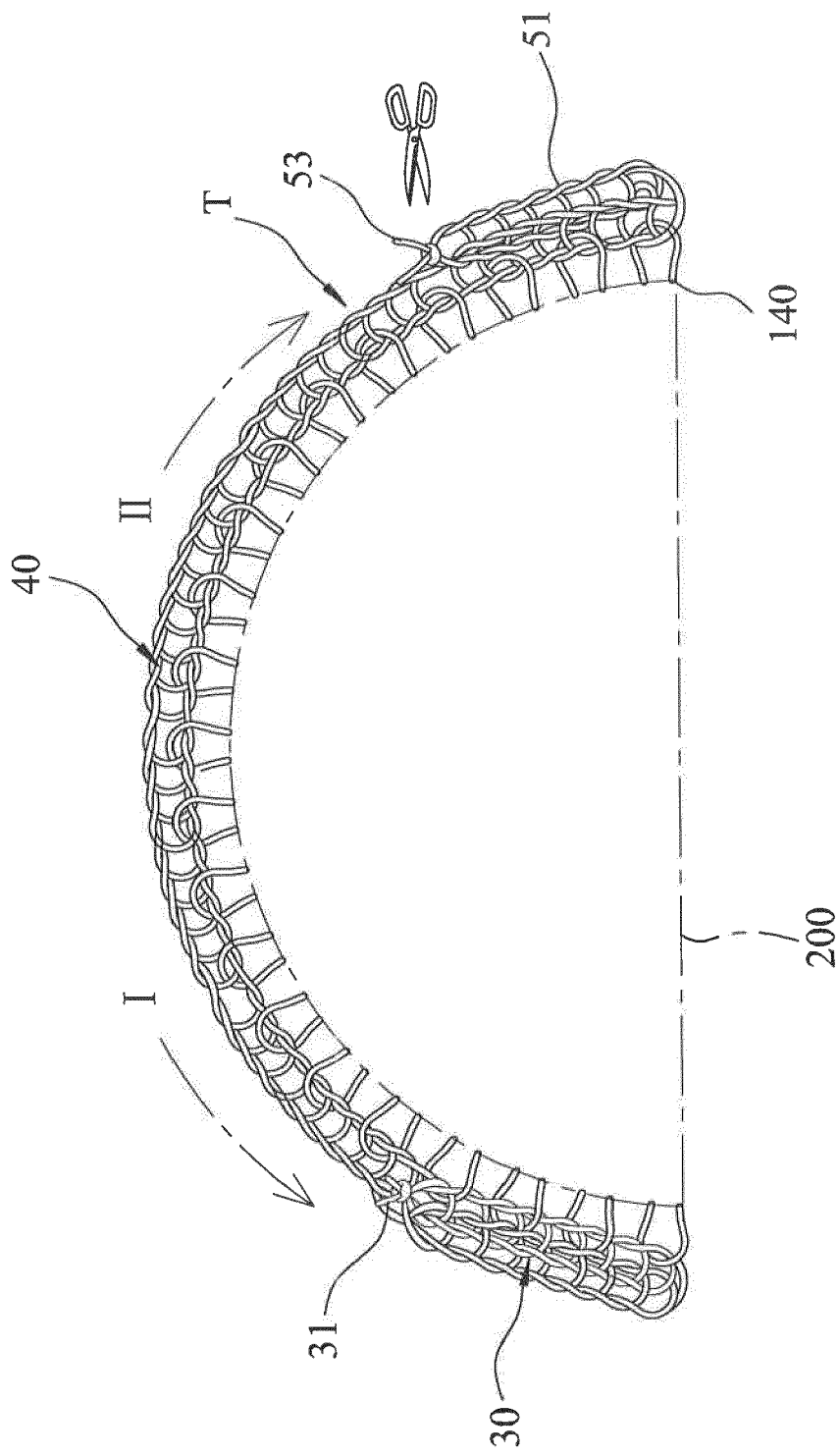


FIG.8



EUROPEAN SEARCH REPORT

Application Number
EP 15 18 1953

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 1 127 972 A2 (MATEC SPA [IT]) 29 August 2001 (2001-08-29) * claims 1-10; figures 1-10 *	1-9	INV. D04B9/56
A	GB 117 803 A (WILLIAMS LOUIS NAPOLEON DEVON [US]) 2 January 1919 (1919-01-02) * page 2, line 25 - page 5, line 34; figures 1-14 *	1-9	
			TECHNICAL FIELDS SEARCHED (IPC)
			D04B D05B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 22 January 2016	Examiner Braun, Stefanie
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03/82 (P04C01)

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ON EUROPEAN PATENT APPLICATION NO.**

EP 15 18 1953

5

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1127972 A2	29-08-2001	CZ 20010685 A3	15-01-2003
		EP 1127972 A2	29-08-2001
		IT MI20000374 A1	28-08-2001
		JP 2001262449 A	26-09-2001
		JP 2001262450 A	26-09-2001
		US 2001017047 A1	30-08-2001

GB 117803 A	02-01-1919	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- TW M476149 [0002] [0007]