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(54) Shoelace fastener

(57) A shoelace fastener (100,100',100",500) for a shoe includes a clamp unit (30,30',30") and a pull lace (10,10',10",510). The clamp unit (30,30',30") includes at least one generally U-shaped flexible string section (31,31',31",530) defining an opening (33,520), and at least one clamp member (40,40") attached slidably to and extending across the flexible string section (31,31',31",530) to divide the opening (33,520) into a first aperture (331) and a second aperture (332). The flexible string section (31,31',31",530) has a U-bend (32,32") cooperating with the clamp member (40,40") to confine the second aperture (332). The clamp member (40,40") is slidable along the flexible string section (31,31',31",530) between a clamping position in which the clamp member (40,40") moves toward the U-bend (32,32"), and a releasing position in which the clamp member (40,40") moves away from the U-bend (32,32"). The pull lace (10,10',10",510) is connected to the flexible string section (31,31',31",530) for pulling the flexible string section (31,31',31",530) so that the clamp member (40,40") slides along the flexible string section (31,31',31",530) to the releasing position.

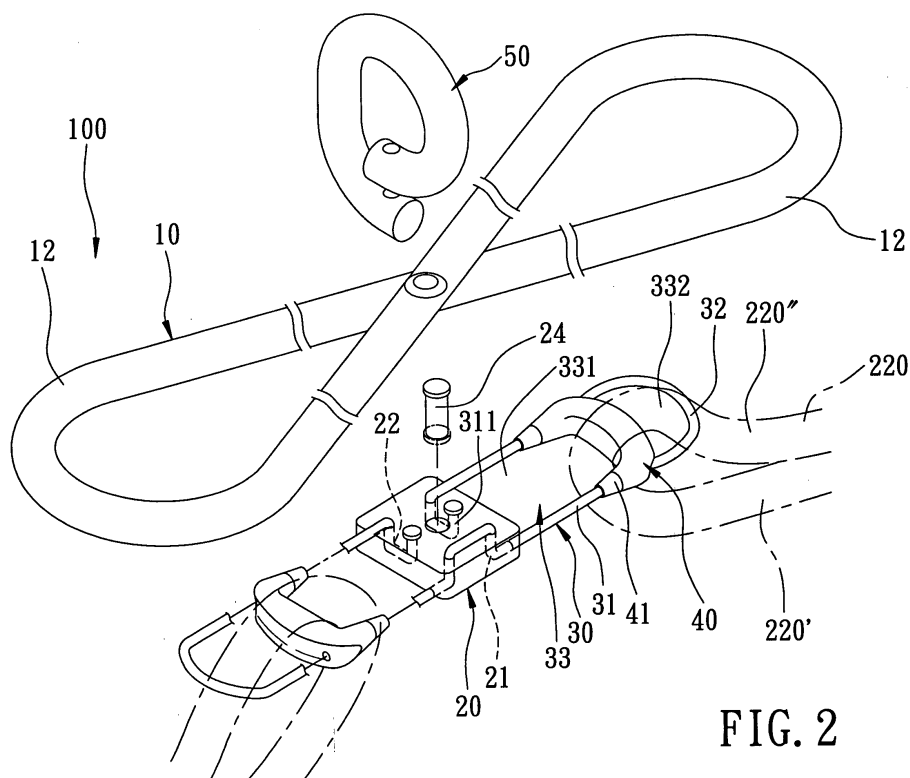


FIG. 2

Description

[0001] The invention relates to a shoelace fastener for a shoe, more particularly to a shoelace fastener for maintaining a tightened state of the shoe.

[0002] U.S. Patent No. 6,571,438 discloses a double-bow shoelace device that is adapted to be mounted on a shoe and that includes a shoelace, a clamp member, and an assembly of two loops and a decorative knot. The shoelace has a first lace segment that is strung on the shoe, and a second lace segment that includes first and second lace portions, each of which has a lower end connected to the first lace segment. The clamp member is sleeved slidably on at least one of the lace portions, and includes an elongate casing, a clamping block slidably received in the casing, and a biasing member disposed in the casing for biasing the clamping block to a lace clamping position. Downward and upward movements of the clamp member along at least one of the lace portions result in tightening and loosening of the shoe. The assembly is disposed on and externally of the clamp member.

[0003] Although the aforesaid shoelace device serves the purpose of tightening and loosening of the shoe, there are some drawbacks associated therewith. Particularly, because the clamping block of the clamp member must be forced inwardly into the casing against the biasing action of the biasing member when it is desired to loosen the shoe, the overall size of the clamp member must be large enough for the fingers of the user to press the clamping block and the clamp member toward each other. The relatively large clamp member has an adverse affect on the appearance of the shoe. It is also noted that the assembly of the loops and the knot on the clamp member is merely for decorative purpose, and does not have any practical function associated therewith.

[0004] Figure 1 illustrates another conventional shoelace fastener 3 for a shoelace 4 having a pair of distal lace portions 402. The fastener 3 includes a plate body formed with an inner pair of lace entry holes 301 and an outer pair of lace exit holes 302. Two resilient clamp members 303 extend integrally from the plate body into the lace exit holes 302, respectively. In use, the distal lace portions 402 are first extended through the lace entry holes 301 and are subsequently extended through the lace exit holes 302. The clamp members 303 clamp the distal lace portions 402 against the plate body of the fastener 3. Although the aforesaid shoelace fastener 3 also serves the purpose of tightening and loosening of a shoe (not shown), there are still some drawbacks associated therewith. Particularly, since the fastener 3 must be pulled upwardly when it is desired to loosen the shoe, the lack of a pull component (not shown) on the fastener 3 makes it difficult to conduct the pulling operation. Moreover, the size of the fastener 3 must be relatively large in order to facilitate upward pulling of the same.

[0005] Therefore, the object of the present invention is to provide a shoelace fastener for a shoe that can overcome the aforesaid drawbacks associated with the

prior art.

[0006] According to this invention, there is provided a shoelace fastener for a shoe that includes a shoe body with a pair of eyelet tabs, and a shoelace strung on the eyelet tabs and having a pair of distal lace segments. The shoelace fastener includes a clamp unit and a pull lace.

[0007] The clamp unit includes at least one generally U-shaped flexible string section defining an opening, and at least one clamp member attached slidably to and extending across the flexible string section to divide the opening into a first aperture and a second aperture. The flexible string section has a U-bend which cooperates with the clamp member to confine the second aperture. The clamp member is slidable along the flexible string section between a clamping position in which the clamp member moves toward the U-bend to clamp a corresponding one of the distal lace segments against the U-bend for maintaining a tightened state of the shoe, and a releasing position in which the clamp member moves away from the U-bend to permit sliding movement of the corresponding one of the distal lace segments for loosening the shoe accordingly.

[0008] The pull lace is connected to the flexible string section for pulling the flexible string section so that the clamp member slides along the flexible string section to the releasing position.

[0009] Other features and advantages of the present invention will become apparent in the following detailed description of the preferred embodiments with reference to the accompanying drawings, of which:

Figure 1 is a sectional view of a conventional shoelace fastener;

Figure 2 is an exploded perspective view of the first preferred embodiment of a shoelace fastener according to this invention;

Figure 3 is a schematic assembled sectional view of the first preferred embodiment to illustrate a tightening operation of a shoe that incorporates the first preferred embodiment;

Figure 4 is a sectional view of the first preferred embodiment, taken along line 4-4 in Figure 3;

Figure 5 is a perspective view showing a shoe that incorporates the first preferred embodiment of this invention;

Figure 6 is a fragmentary sectional view of the first preferred embodiment, taken along line 6-6 in Figure 3;

Figure 7 is a view similar to Figure 3, illustrating a loosening operation of the shoe;
 Figure 8 is a perspective view of the second preferred embodiment of a shoelace fastener according to this invention;
 Figure 9 is a schematic partly sectional assembled view of the third preferred embodiment of a shoelace fastener according to this invention, which illustrates a tightening operation of a shoe that incorporates the third preferred embodiment;
 Figure 10 is a view similar to Figure 9, illustrating a loosening operation of the shoe;
 Figure 11 is a schematic assembled sectional view of the fourth preferred embodiment of a shoelace fastener according to this invention;
 Figure 12 is a sectional view of the fourth preferred embodiment, taken along line 12-12 in Figure 11;
 Figure 13 is a perspective view of the fifth preferred embodiment of a shoelace fastener according to this invention, which is adapted to be applied to a shoe; and
 Figure 14 is a schematic assembled sectional view of the fifth preferred embodiment.

[0010] Referring to Figures 2, 3 and 5, the first preferred embodiment of a shoelace fastener 100 according to this invention is shown to be adapted for use with a shoe which includes a shoe body 300 with a pair of eyelet tabs 310, and a shoelace 200 having an anchoring segment 210 strung on the eyelet tabs 310, and a pair of distal lace segments 220, each of which is connected to the anchoring segment 210 at one end. The shoelace fastener 100 includes a clamp unit 30, a pull lace 10, a positioning seat 20, and a tying lace 50. It should be noted herein that, except for Figure 5, the shoelace fastener 100 is not drawn to scale in the accompanying drawings and is actually illustrated in a magnified form for the sake of clarity.

[0011] The clamp unit 30 includes a pair of flexible string sections 31 connected to each other, and a pair of clamp members 40 respectively attached to the flexible string sections 31. The flexible string sections 31 are formed from a single nylon string. Each of the flexible string sections 31 is formed in a U-shaped configuration so as to define an opening 33. Each of the clamp members 40 is attached slidably to and extends across a corresponding one of the flexible string sections 31 to divide the opening 33 into a first aperture 331 and a second aperture 332. Each of the clamp members 40 has two opposite ends 41 respectively formed with slots. The flexible string sections 31 extend through the slots. Each of the flexible string sections 31 has a U-bend 32 which cooperates with the corresponding one of the clamp members 40 to confine the second aperture 332. Each of the distal lace segments 220 has an entry part 220' and an exit part 220" connected to the entry part 220' at one end. The first aperture 331 is adapted to receive the entry part 220' of a corresponding one of the distal lace segments 220 of the shoelace 200. The second aperture 332 is adapted to receive the exit part 220" of the corresponding one of the distal lace segments 220 of the shoelace 200. Each of the clamp members 40 is slidable along the corresponding one of the flexible string sections 31 between a clamping position in which the corresponding one of the clamp members 40 moves toward the U-bend 32, and a releasing position in which the corresponding one of the clamp members 40 moves away from the U-bend 32. Each of the clamp members 40 presses the exit part 220" of the corresponding one of the distal lace segments 220 of the shoelace 200 against the U-bend 32 of the corresponding one of the flexible string sections 31 when the clamp member 40 is in the clamping position.

[0012] The pull lace 10 is connected to the flexible string sections 31 for pulling the flexible string sections 31 so that the clamp members 40 respectively slide along the flexible string sections 31 to the releasing position. The pull lace 10 is made of the same material as that of the shoelace 200, and includes a pair of interconnected loops 12. The U-bend 32 of the corresponding one of the flexible string sections 31 is attached to a corresponding one of the loops 12 of the pull lace 10.

[0013] The positioning seat 20 is formed as a rectangular plate, and is attached to the pull lace 10 between the loops 12. Each of the flexible string sections 31 is connected to the positioning seat 20 and extends beneath a corresponding one of the loops 12. The positioning seat 20 is fastened to the pull lace 10 with the use of a rivet 24 (best shown in Figure 4). The positioning seat 20 includes two anchoring holes 22 and a string passage 21. The single string formed into the flexible string sections 31 passes through the string passage 21 and is bent to form the U-shaped flexible string sections 31 on two sides of the positioning seat 20. The single string has two anchoring end portions 311, which are respectively anchored to the anchoring holes 22. The tying lace 50 is made of the same material as that of the shoelace 200, and is fixed to and extends around the positioning seat 20 by riveting.

[0014] Referring again to Figures 3 and 5, in use, each of the distal lace segments 220 is extended through the first aperture 331 of the opening 33, over the corresponding one of the clamp members 40, into the second aperture 332 of the opening 33, and out of the U-bend 32 of the corresponding one of the flexible string sections 31. At the same time, the pull lace 10, the tying lace 50 and the distal lace segments 220 cooperate to form a double-bow configuration. After a foot (not shown) is slipped into the shoe body 300, the distal lace segments 220 can be pulled apart from each other as indicated by arrows (I) in Figure 3 to tighten the shoe body 300. When the shoe body 300 is tightened, the eyelet tabs 310 are forced apart by the foot in the shoe body 300, thereby applying tension on the shoelace 200. At the same time, each of the clamp members 40 is forced by a corresponding one of the distal lace segments 220 to move toward the U-bend 32 of the corresponding one of the flexible string sections 31 such that each of the distal lace segments 220

is clamped in the clamping position between the corresponding one of the clamp members 40 and the corresponding U-bend 32 for maintaining a tightened state of the shoe (best shown in Figure 6).

[0015] Referring to Figure 7, to loosen the shoe body 300, a manual pulling force is applied on the flexible string sections 31 through the pull lace 10. This results in movement of each of the clamp members 40 away from the corresponding U-bend 32, thereby releasing the distal lace segments 220 from being clamped by the clamp members 40 against the U-bends 32 so as to permit sliding movement of the distal lace segments 220 as indicated by arrows (II) in Figure 7 for loosening the shoe body 300 accordingly.

[0016] Referring to Figure 8, the second preferred embodiment of the shoelace fastener 100' according to this invention is shown to be similar to the first preferred embodiment, except that the shoelace fastener 100' does not include the positioning seat 20, and that the tying lace 50' extends around the pull lace 10' and the clamp unit 30'. The loops 12' are interconnected, and the flexible string sections 31' are interconnected. Both of the pull lace 10' and the clamp unit 30' are fixed directly to the tying lace 50'.

[0017] Referring to Figures 9 and 10, the third preferred embodiment of the shoelace fastener 100" according to this invention is shown to be similar to the first preferred embodiment, except that the clamp unit 30" is configured as a single U-shaped flexible string section 31" and a single clamp member 40", and that the pull lace 10" is configured as a single loop 12", which is connected to the flexible string section 31" of the clamp unit 30" at the U-bend 32". Both of the pull lace 10" and the clamp unit 30" are fixed directly to the tying lace 50". Furthermore, one of the distal lace segments 400" is fixed directly to the tying lace 50", and is anchored to a corresponding one of the eyelet tabs 310" at one end.

Referring to Figures 11 and 12, the fourth preferred embodiment of the shoelace fastener 100 according to this invention is shown to be similar to the first preferred embodiment, except that the clamp unit 30 further includes blocking units 70, each of which is attached to and extends across the corresponding one of the flexible string sections 31, and each of which is disposed between the corresponding one of the clamp members 40 and the corresponding one of the U-bends 32.

[0018] Referring to Figures 13 and 14, the fifth preferred embodiment of the shoelace fastener 500 according to this invention is shown to be similar to the second preferred embodiment, except that a tying knot 550 is connected to the flexible string sections 530 between the openings 520 of the flexible string sections 530. The pull lace 510 has two string segments 560 extending outward from the knot 550. Each of the string segments 560 is a single-line string segment. Each of the distal lace segments 230' of the shoelace 200' is formed in a U-shaped configuration so that the pull lace 510, the tying knot 550 and the distal lace segments 230' cooperate to form a double-bow configuration.

[0019] In view of the aforesaid, the shoelace fastener 100, 100', 100", 500 of the present invention is easy to operate. Moreover, since there is no need to hold the shoelace fastener 100, 100', 100", 500 when it is desired to loosen a shoe, the size of the shoelace fastener 100, 100', 100", 500 can be designed to be smaller as compared to the prior art so as not to result in an adverse affect on the appearance of the shoe.

Claims

1. A shoelace fastener (100, 100', 100", 500) for a shoe, the shoe including a shoe body (300) with a pair of eyelet tabs (310), and a shoelace (200) strung on the eyelet tabs (310) and having a pair of distal lace segments (220), said shoelace fastener (100, 100', 100", 500)

characterized by:

a clamp unit (30, 30', 30") including at least one generally U-shaped flexible string section (31, 31', 31", 530) defining an opening (33, 520), and at least one clamp member (40, 40") attached slidably to and extending across said flexible string section (31, 31', 31", 530) to divide said opening (33, 520) into a first aperture (331) and a second aperture (332), said flexible string section (31, 31', 31", 530) having a U-bend (32, 32") which cooperates with said clamp member (40, 40") to confine said second aperture (332), said clamp member (40, 40") being slidable along said flexible string section (31, 31', 31", 530) between a clamping position in which said clamp member (40, 40") moves toward said U-bend (32, 32") to clamp a corresponding one of the distal lace segments (220) against said U-bend (32, 32") for maintaining a tightened state of the shoe, and a releasing position in which said clamp member (40, 40") moves away from said U-bend (32, 32") to permit sliding movement of the corresponding one of the distal lace segments (22) for loosening the shoe accordingly; and

a pull lace (10, 10', 10", 510) connected to said flexible string section (31, 31', 31", 530) for pulling said flexible string section (31, 31', 31", 530) so that said clamp member (40, 40") slides along said flexible string section (31, 31', 31", 530) to said releasing position.

2. The shoelace fastener (100) as claimed in Claim 1, **characterized in that** said first aperture (331) is adapted to receive an entry part (220') of the corresponding one of the distal lace segments (220) of the shoelace (200), said

second aperture (332) being adapted to receive an exit part (220") of the corresponding one of the distal lace segments (220) of the shoelace (200), said clamp member (40) pressing the exit part (220") of the corresponding one of the distal lace segments (220) of the shoelace (200) against said U-bend (32) of said flexible string section (31) when said clamp member (40) is in said clamping position, said U-bend (32) being attached to said pull lace (10) .

- 5
3. The shoelace fastener (100) as claimed in Claim 1, **characterized in that** said clamp member (40) has two opposite ends (41) respectively formed with slots, said flexible string section (31) extending through said slots.
- 10
4. The shoelace fastener (100) as claimed in Claim 1, **characterized in that** said clamp unit (30) includes a pair of said flexible string sections (31) connected to each other, and a pair of said clamp members (40) respectively attached to said flexible string sections (31) .
- 15
5. The shoelace fastener (100) as claimed in Claim 4, **characterized in that** said pull lace (10) includes a pair of interconnected loops (12).
- 20
6. The shoelace fastener (100) as claimed in Claim 5, further **characterized by** a positioning seat (20) attached to said pull lace (10) between said loops (12), each of said flexible string sections (31) being connected to said positioning seat (20) and extending beneath a corresponding one of said loops (12), each of said flexible string sections (31) having said U-bend (32) attached to a corresponding one of said loops (12) .
- 25
7. The shoelace fastener (100) as claimed in Claim 6, **characterized in that** said positioning seat (20) is riveted to said pull lace (10) .
- 30
8. The shoelace fastener (100) as claimed Claim 6, **characterized in that** said positioning seat (20) includes two anchoring holes (22) and a string passage (21), said flexible string sections (31) being formed from a single string which passes through said string passage (21) and which is bent to form said U-shaped flexible string sections (31) on two sides of said positioning seat (20), said single string having two anchoring end portions (311), which are respectively anchored to said anchoring holes (22).
- 35
9. The shoelace fastener (100) as claimed in Claim 6, further **characterized by** a tying lace (50) fixed to and extending around said positioning seat (20).
- 40
10. The shoelace fastener (100') as claimed in Claim 5, further **characterized by** a tying lace (50') which extends around said pull lace (10') and said clamp unit (30') where said loops (12') are interconnected and where said flexible string sections (31') are interconnected, both of said pull lace (10') and said clamp unit (30') being fixed directly to said tying lace (50').
- 45
11. The shoelace fastener (100") as claimed in Claim 1, **characterized in that** said pull lace (10") includes a loop (12") connected to said flexible string section (31") of said clamp unit (30") at said U-bend (32").
- 50
12. The shoelace fastener (100) as claimed in Claim 1, **characterized in that** said clamp unit (30) further includes a blocking unit (70) which is attached to and which extends across said flexible string section (31), and which is disposed between said clamp member (40) and said U-bend (32).
- 55
13. The shoelace fastener (500) as claimed in Claim 4, further **characterized by** a tying knot (550) connected to said flexible string sections (530) between said openings (520) of said flexible string sections (530), said pull lace (510) having two string segments (560) extending outward from said knot (550).
14. The shoelace fastener (500) as claimed in Claim 13, **characterized in that** each of said string segments (560) is a single-line string segment.

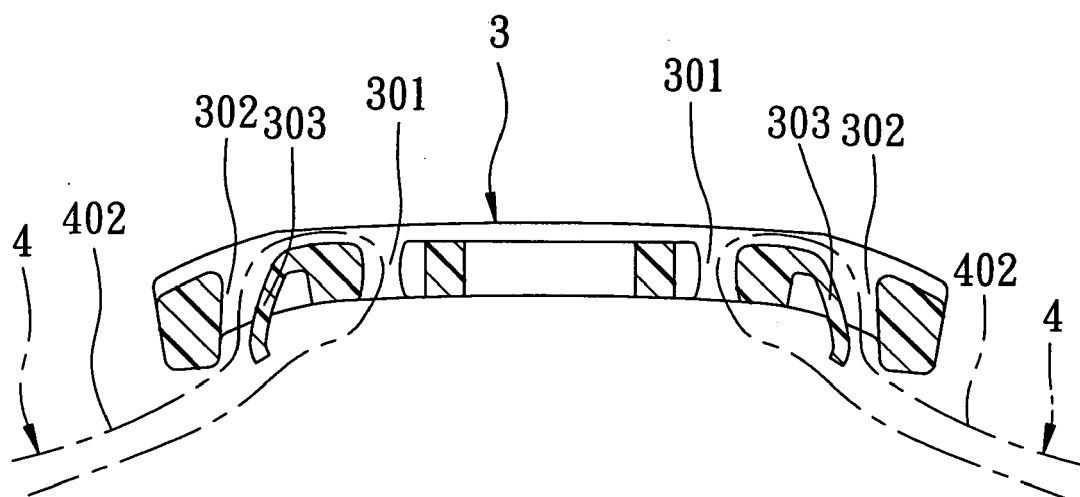


FIG. 1
PRIOR ART

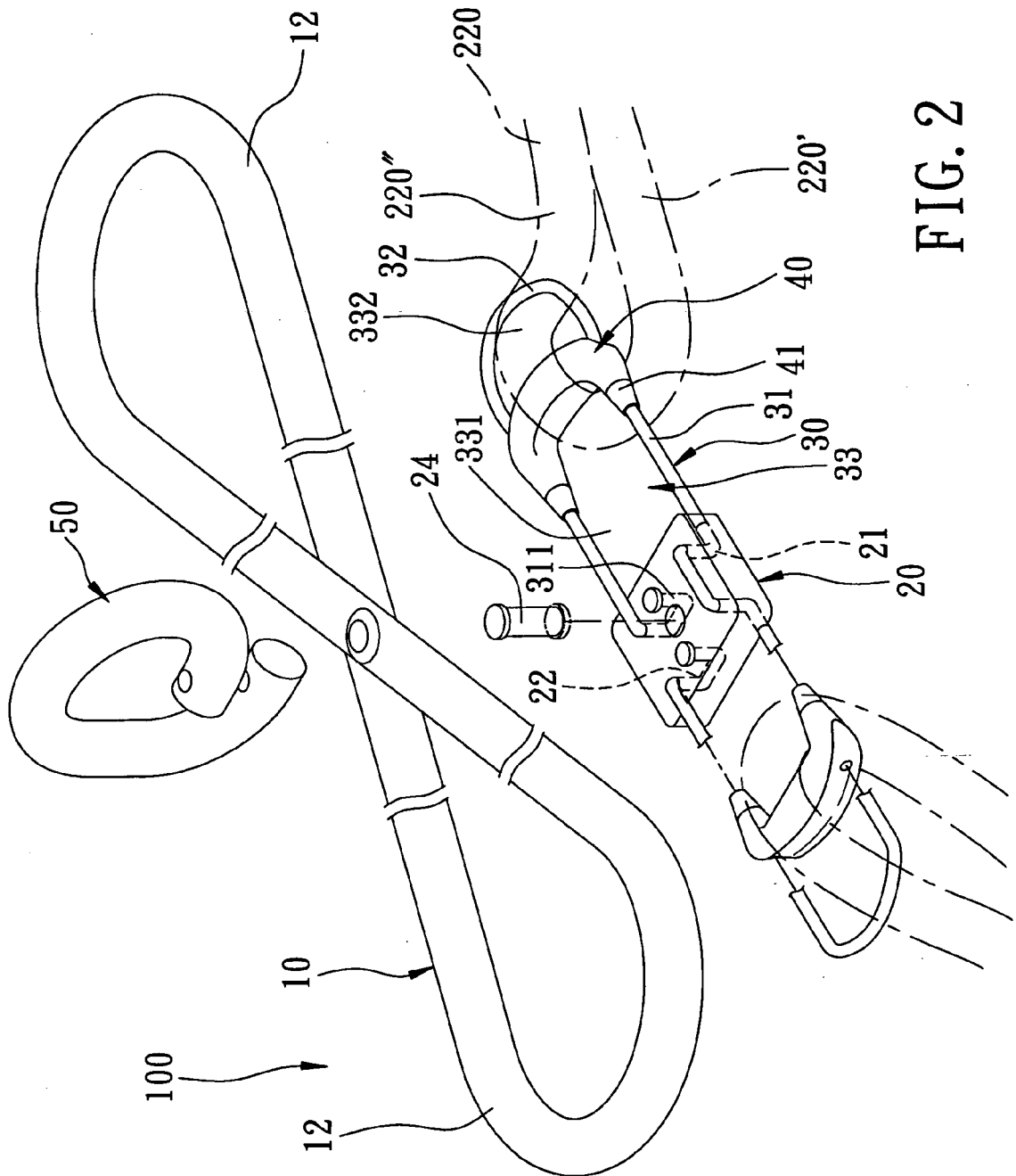


FIG. 2

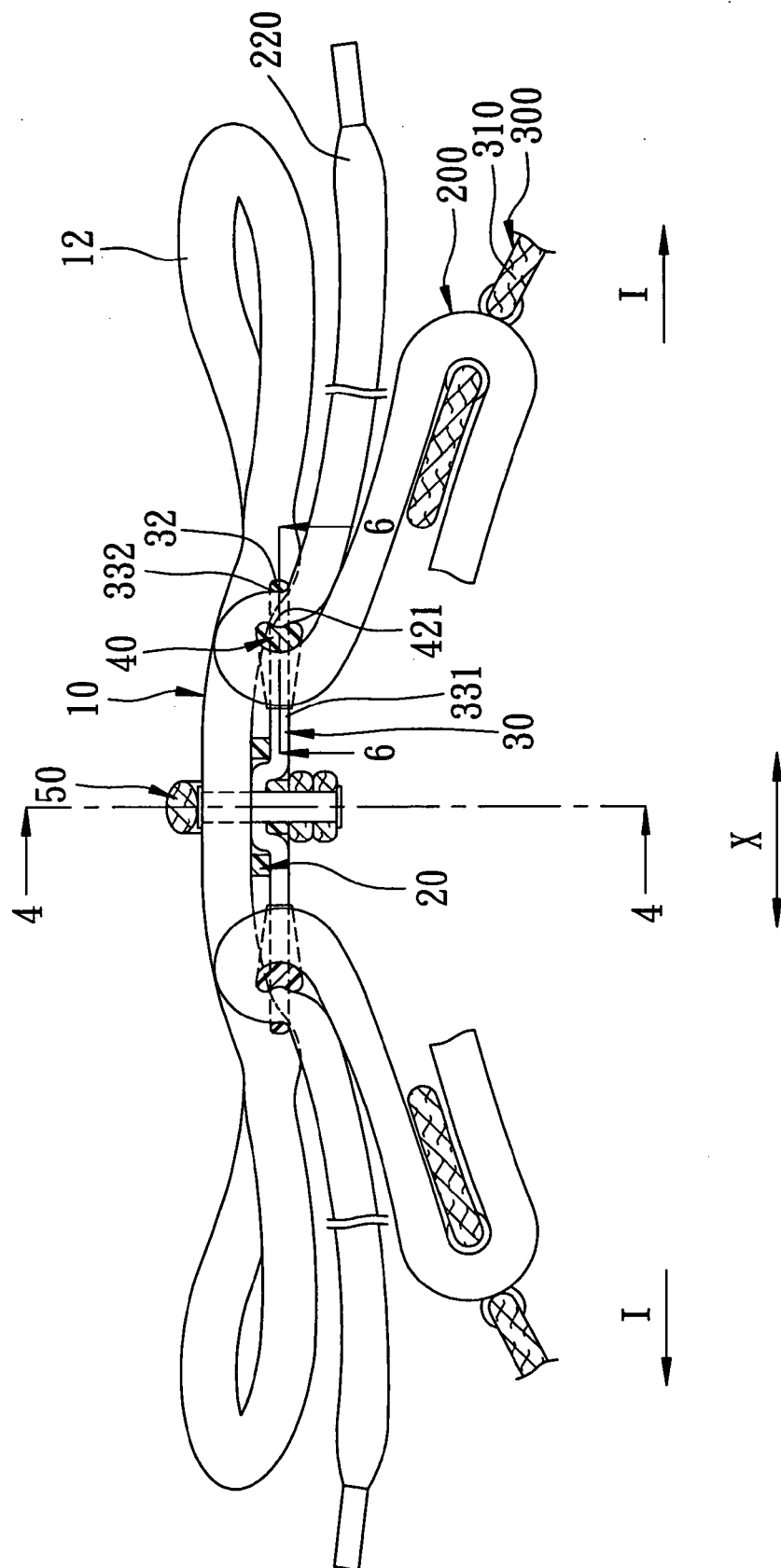


FIG. 3

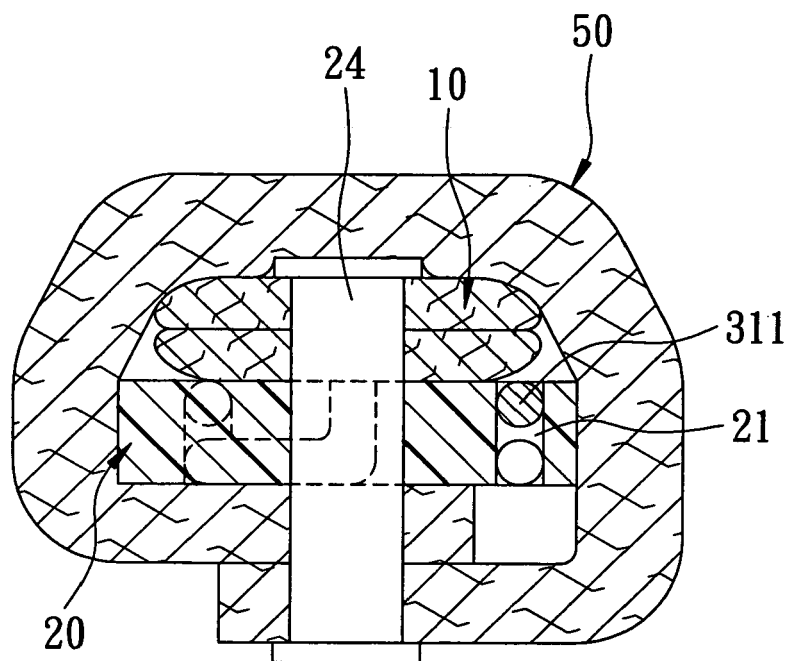


FIG. 4

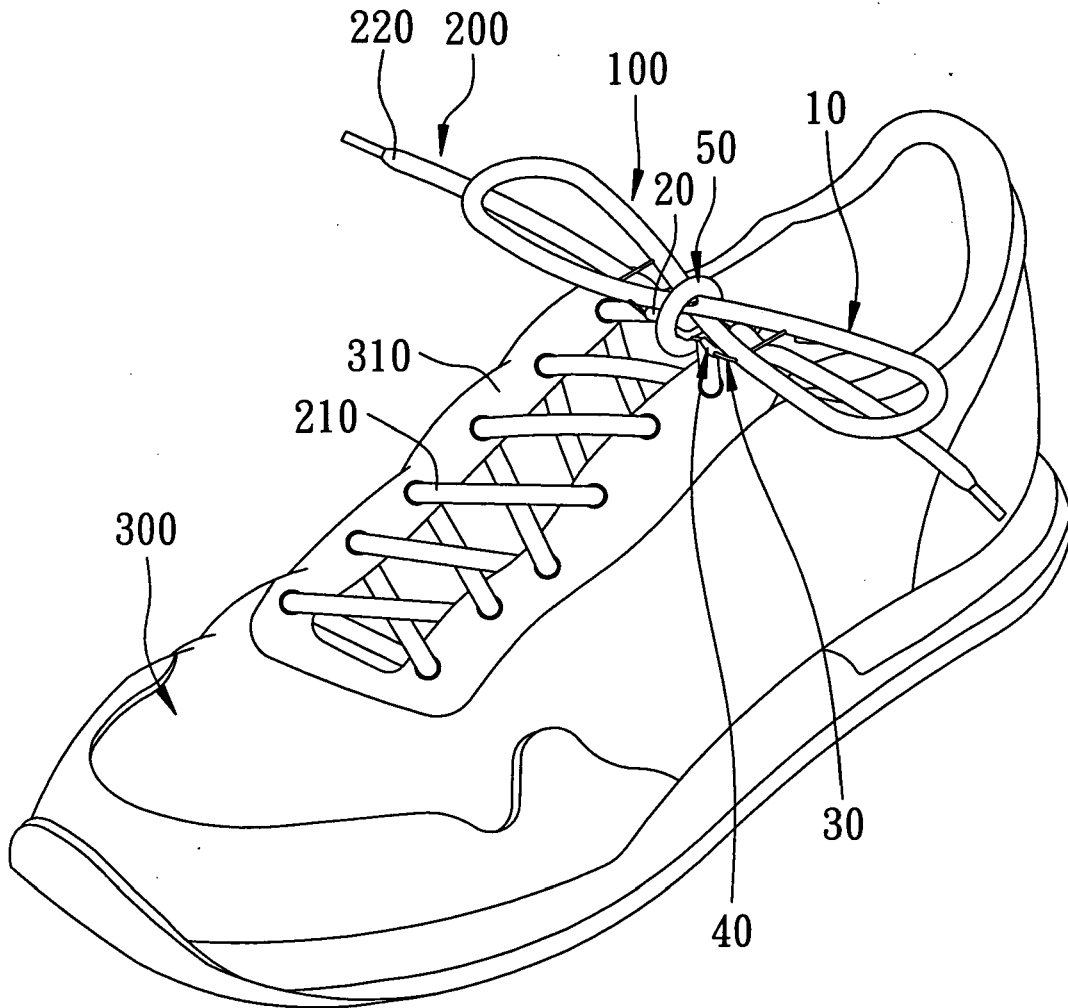


FIG. 5

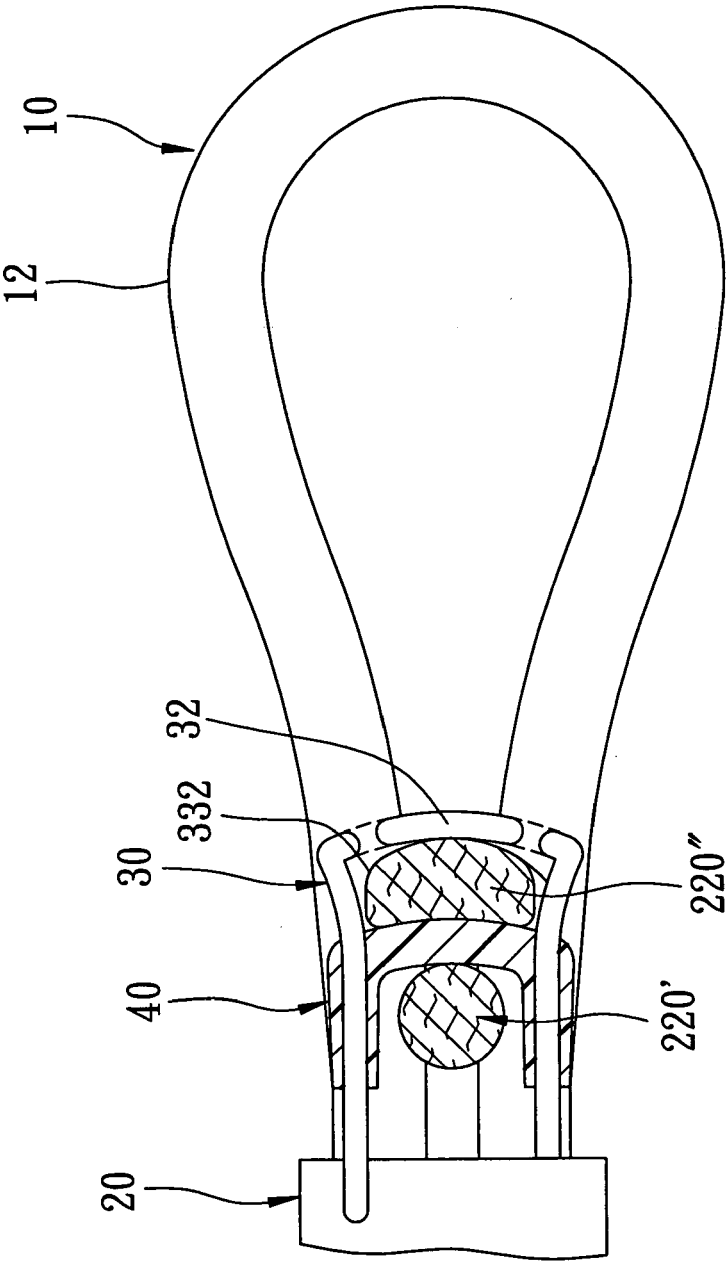


FIG. 6

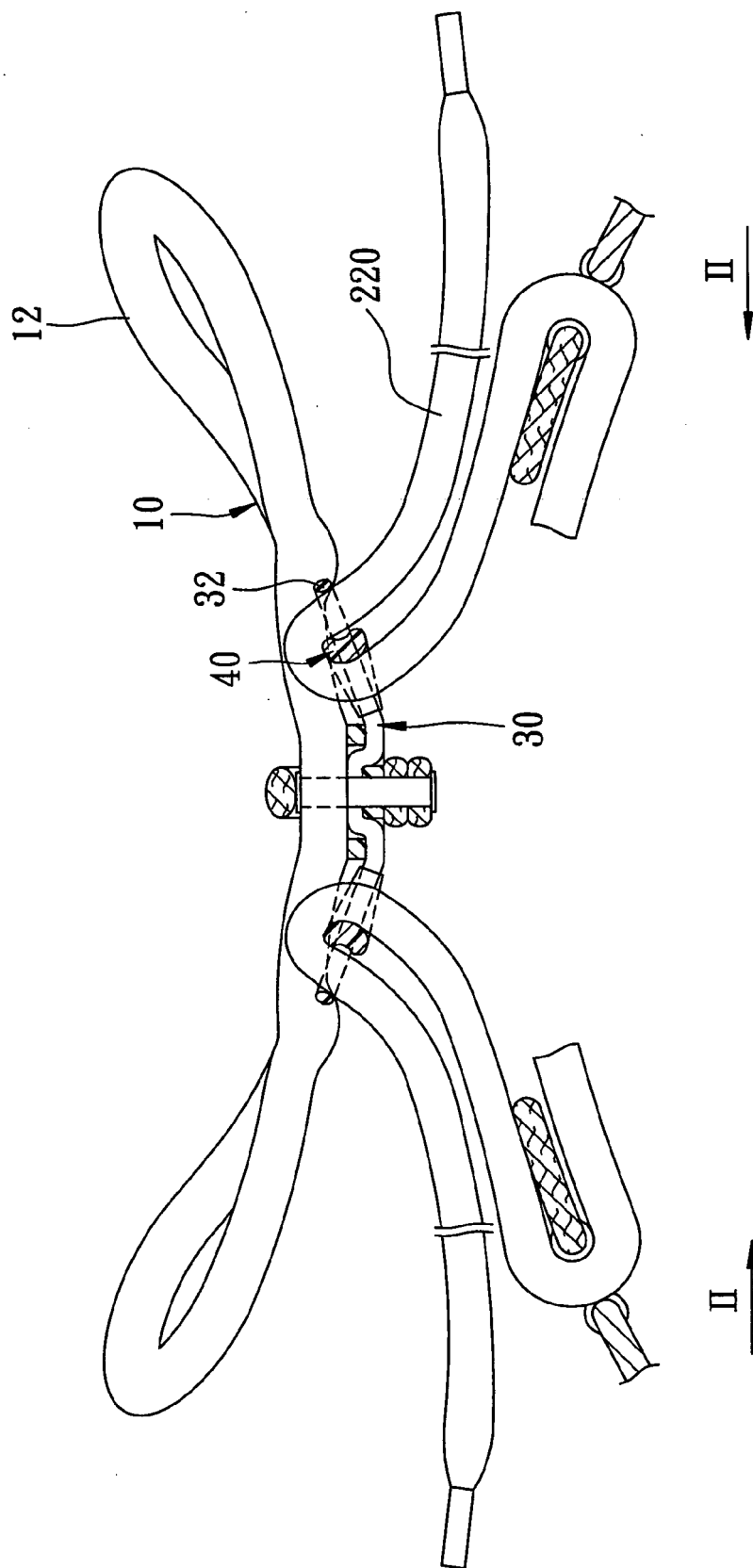


FIG. 7

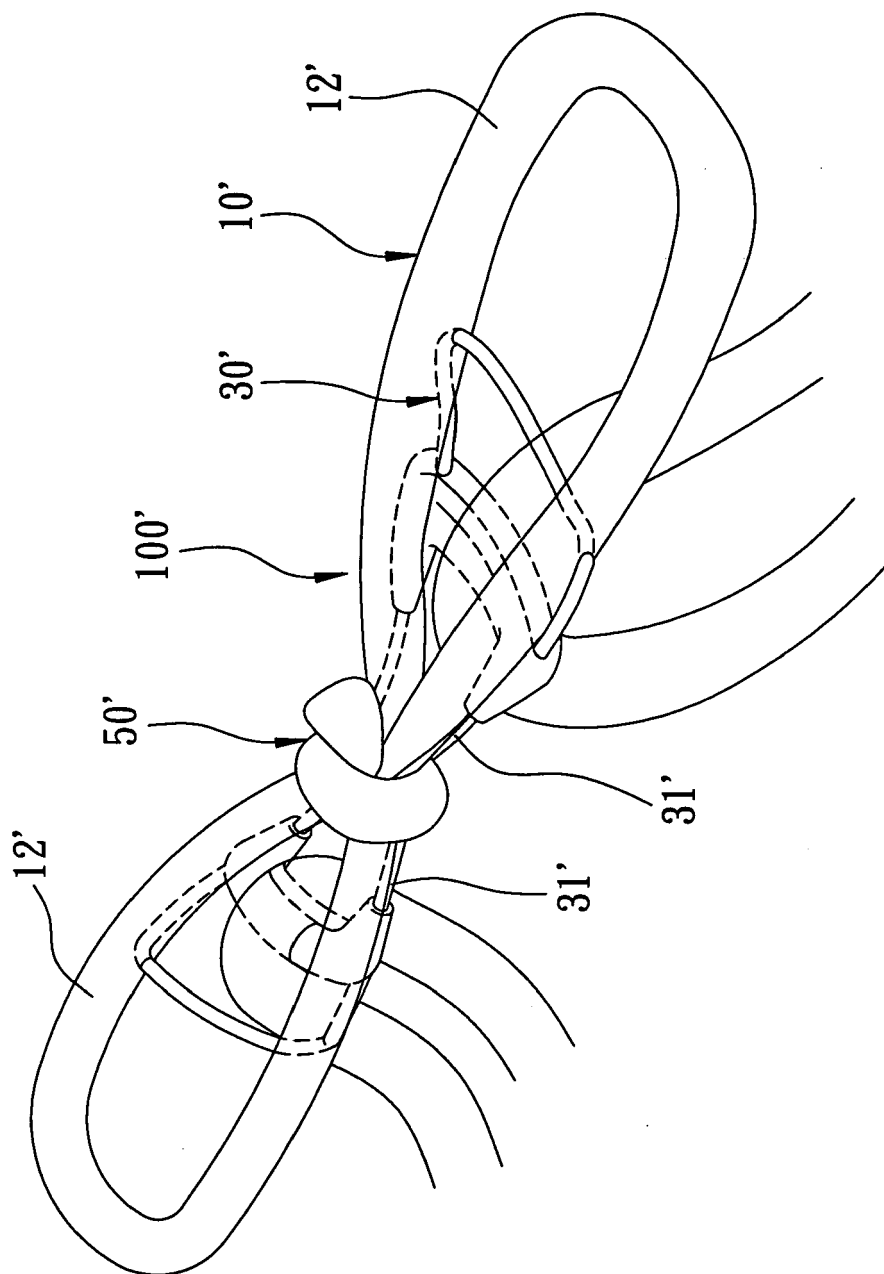


FIG. 8

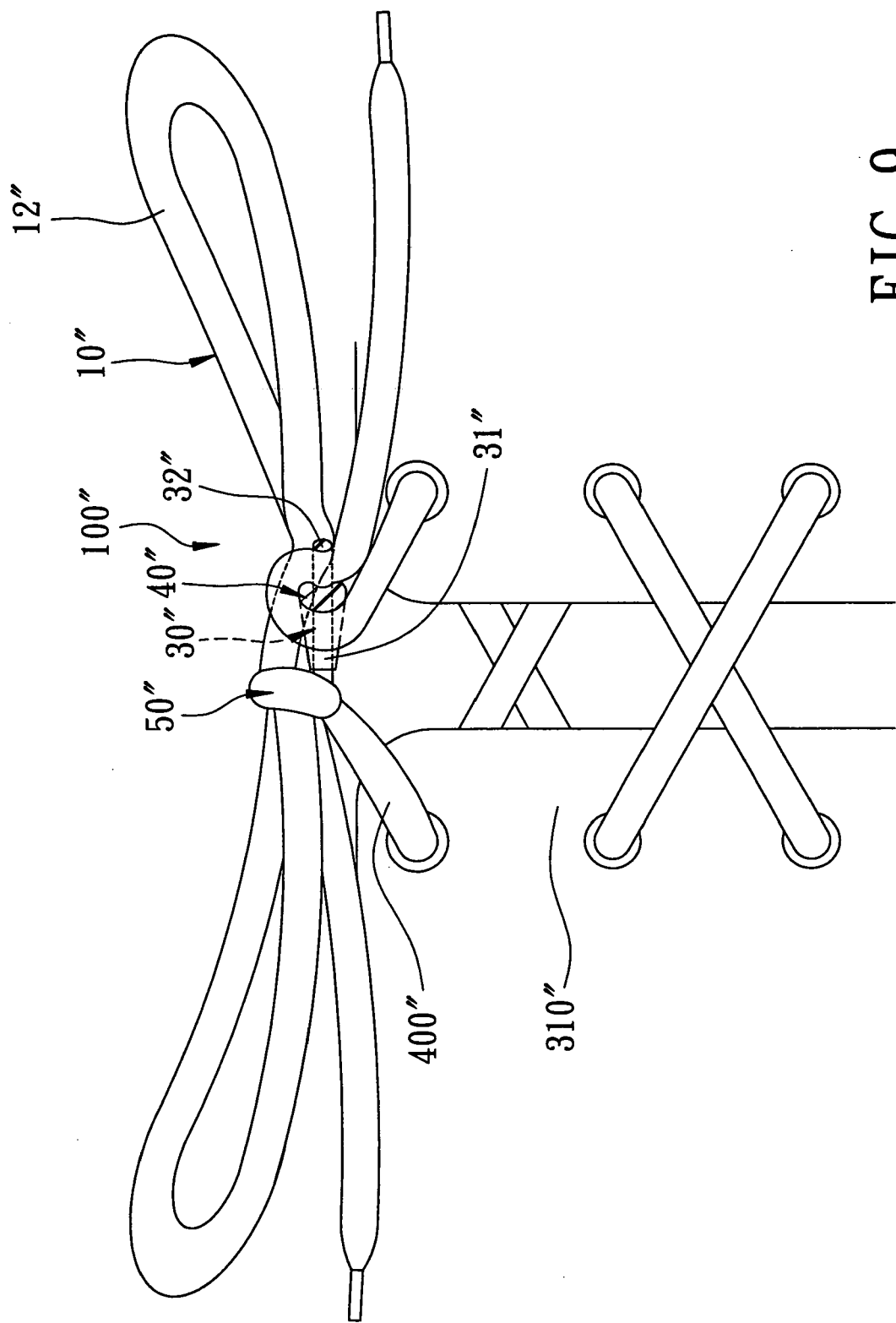


FIG. 9

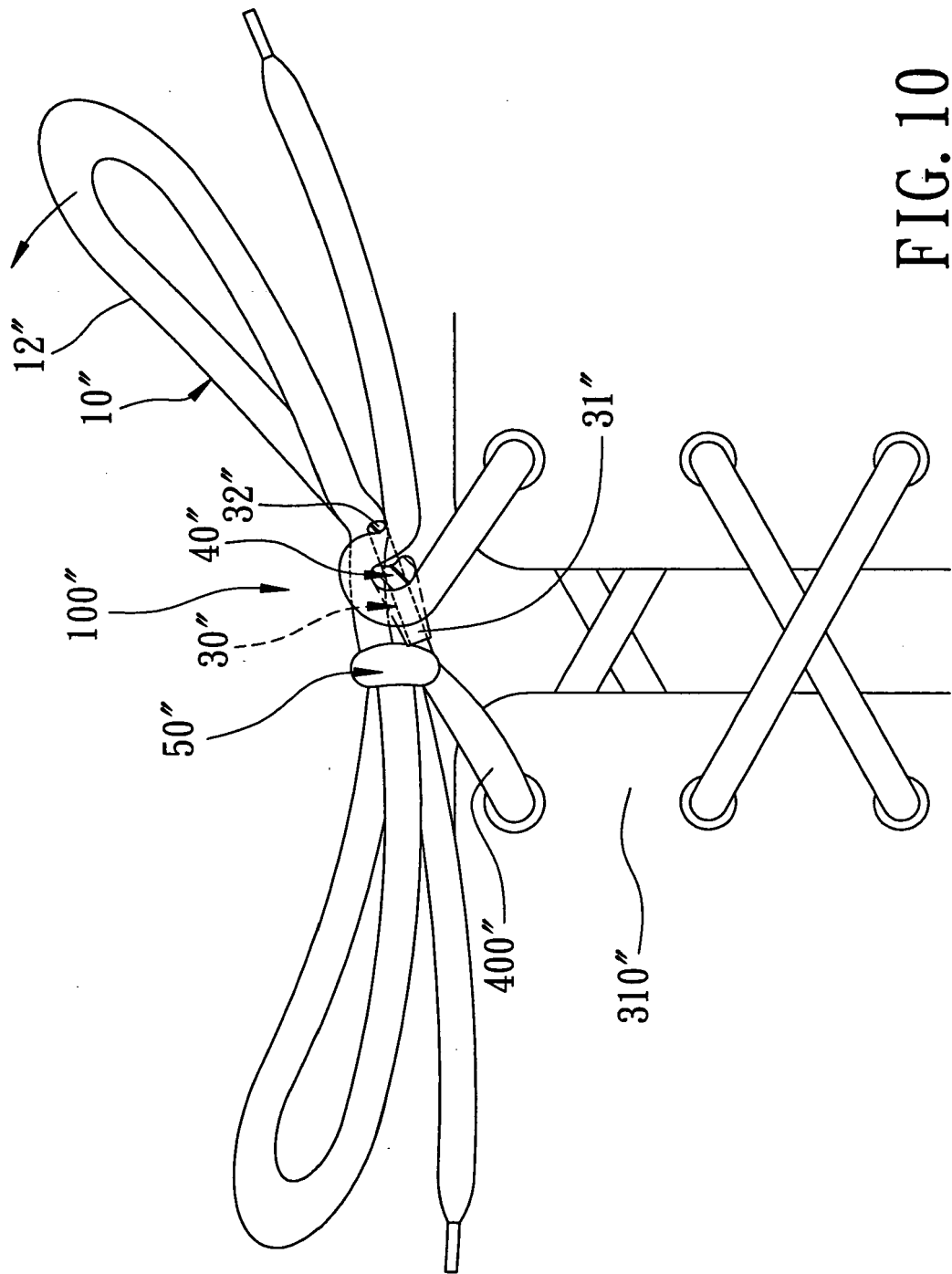


FIG. 10

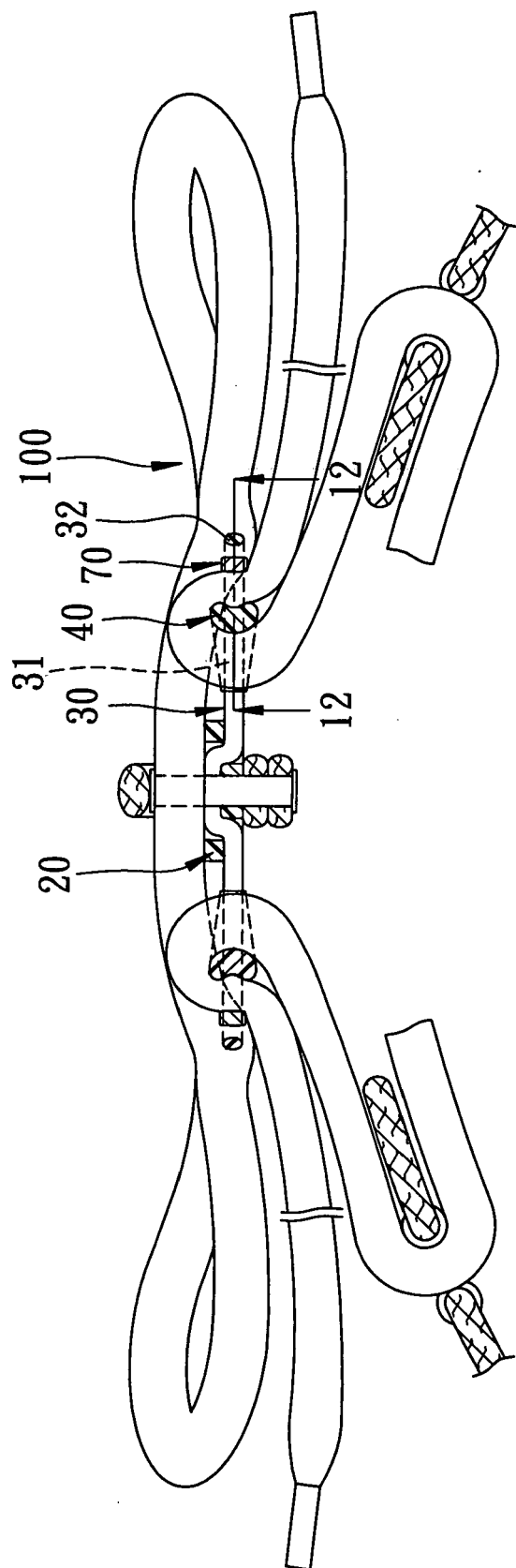


FIG. 11

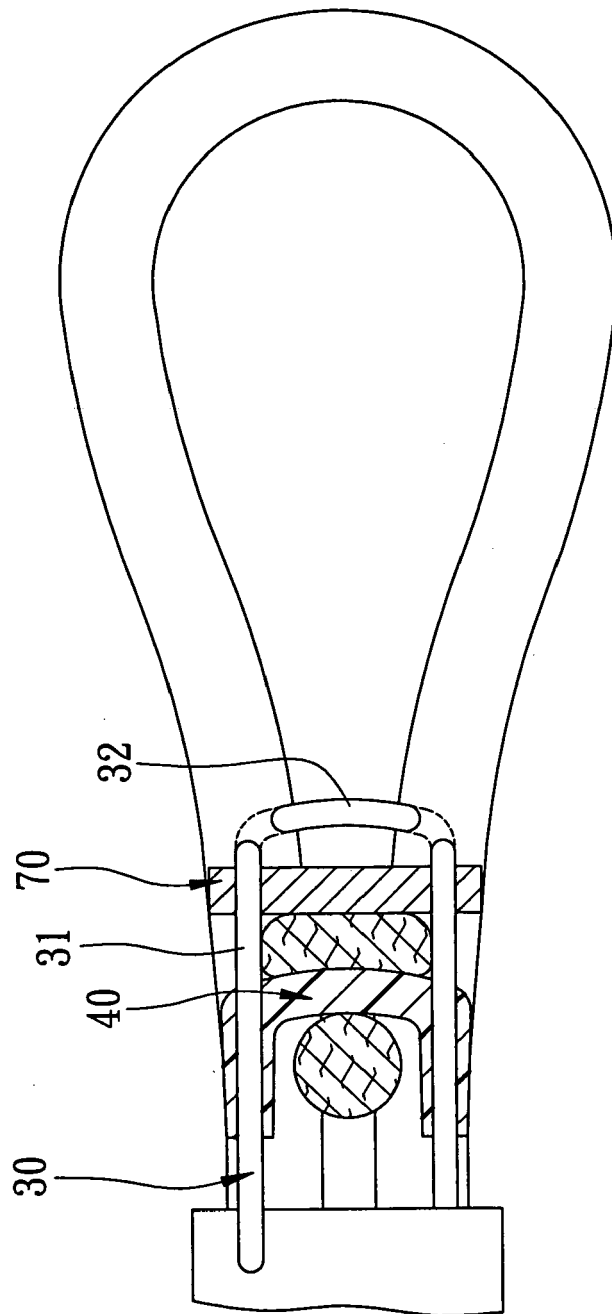


FIG. 12

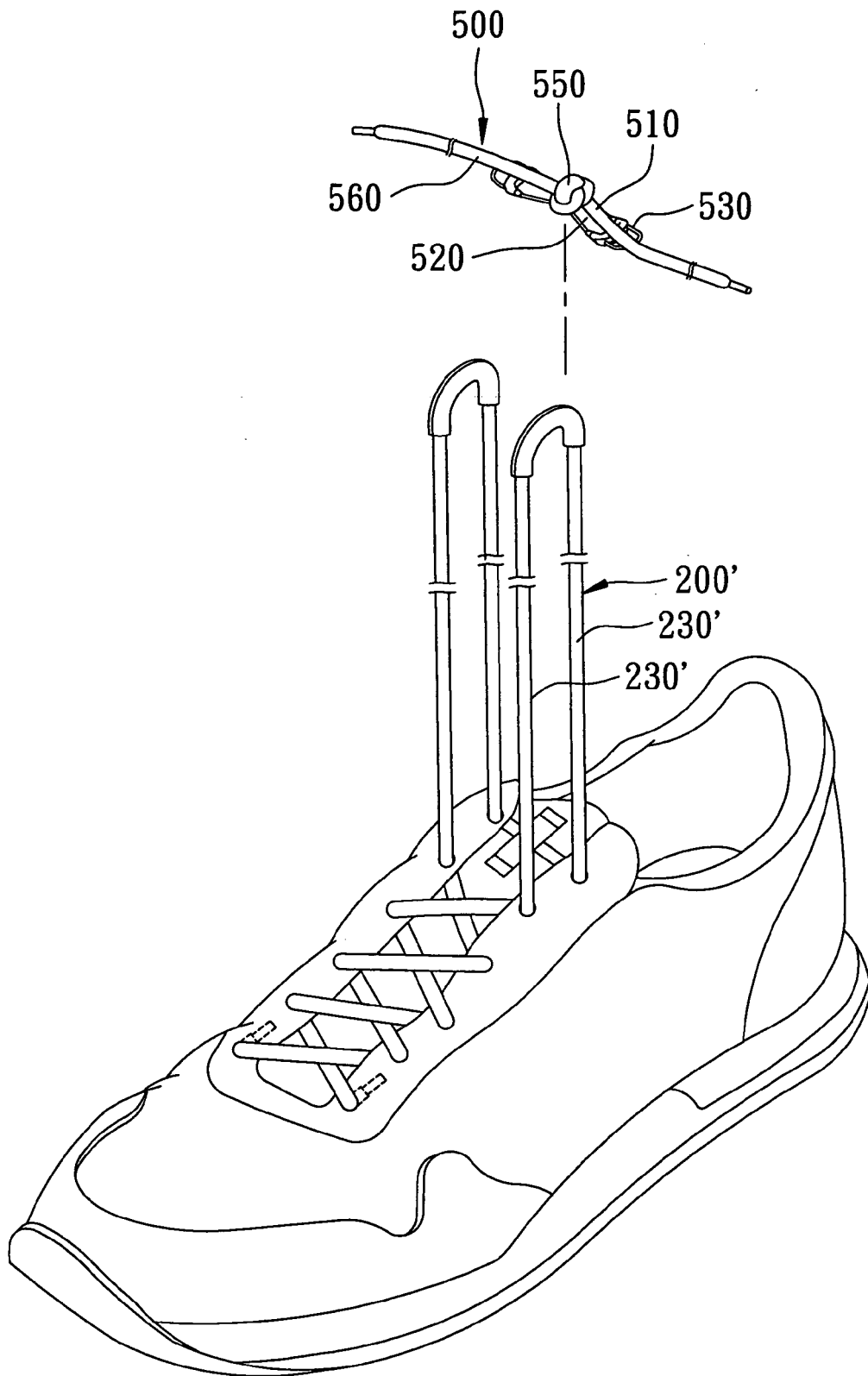


FIG. 13

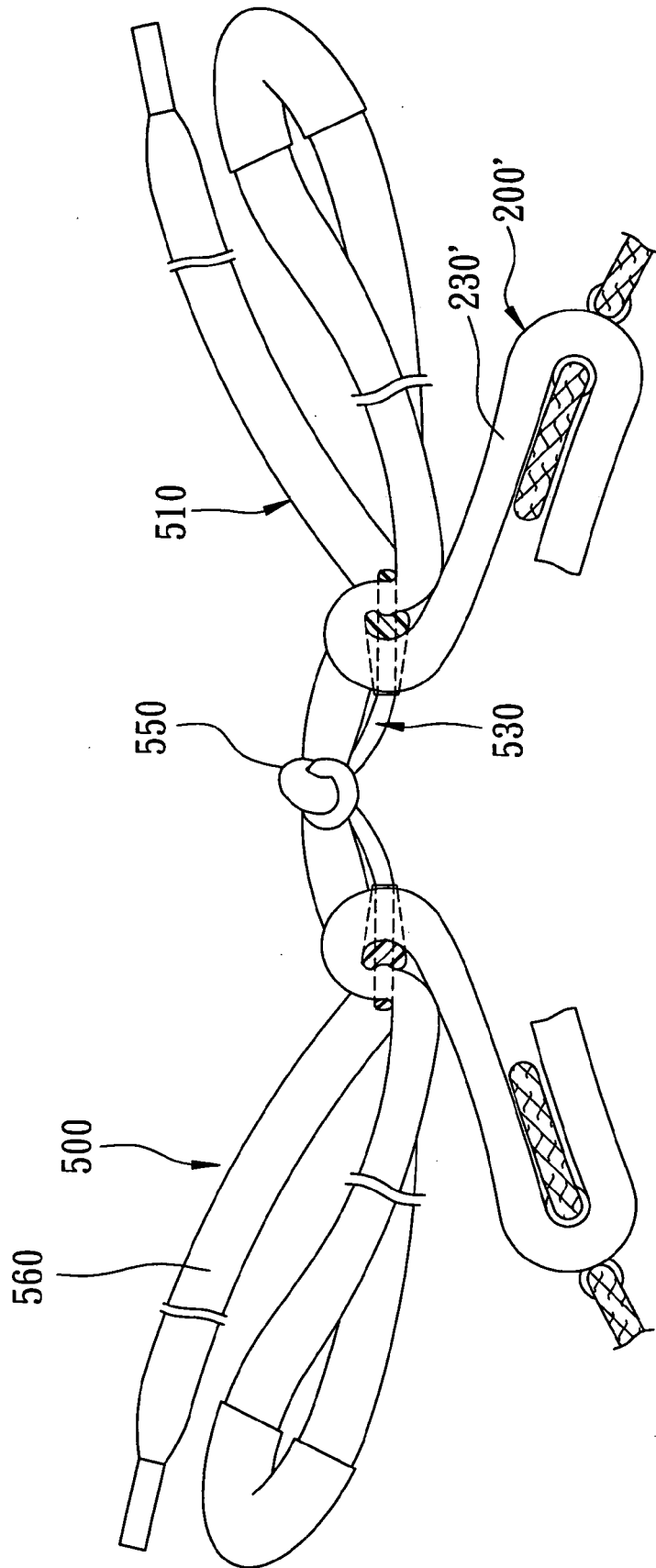


FIG. 14



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 25 1079

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	US 2004/154193 A1 (LIU KUN-CHUNG) 12 August 2004 (2004-08-12) * figures 3,4 *	1	A43C7/08
A	US 2005/015947 A1 (LIU KUN-CHUNG) 27 January 2005 (2005-01-27) * figures *	1	
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			A43C
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 14 July 2005	Examiner Vesin, S
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 05 25 1079

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14-07-2005

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