# Footwear Strap and Footwear Having the Same

## TECHNICAL FIELD

**[0001]** The present application relates to the technical field of footwear, in particular to a footwear strap and footwear having the same.

## BACKGROUND

**[0002]** A footwear strap is generally provided on footwear such as sandals, so as to secure the heel part to footwear. The footwear strap needs to be designed, not only to fit the heel and firmly be affixed to the footwear, but also to facilitate a wearer to put on and take off the footwear. Therefore, the design of the footwear strap plays an important role in the use and wearing of the footwear.

## SUMMARY

**[0003]** Embodiments of the present application provide a footwear strap and footwear having the same to improve the comfort and convenience of putting on and taking off the footwear.

**[0004]** In the first aspect, an embodiment of the present application provides a footwear strap, which comprises a strap element and a rigid heel structural element; wherein the rigid heel structural element is disposed inside the strap element, and the rigid heel structural element comprises an upper rear portion; when the footwear strap is assembled to footwear, the upper rear portion extends in a direction from the position where the footwear contacts the heel toward of the position where the footwear contacts the toe, and inclines downward of the footwear; the upper rear portion has a convex curvature which is adapted to the shape of the heel so as to facilitate to easily receive the heel; when the footwear strap is assembled to the footwear, an inner lower portion of the convex curvature faces an opening of the footwear.

**[0005]** In one implementation, the rigid heel structural element comprises two connecting arms.

**[0006]** In one implementation, the connecting arms comprises a medial arm and a lateral arm connected with the medial arm, the lateral arm and the medial arm are integrally molded, and the lateral arm is connected with the upper rear portion.

**[0007]** In one embodiment, when the footwear strap is assembled to the footwear, the lateral arm extends downward to a footbed, insole or strobel sock of the footwear; the medial arm extends downward to the footbed, insole or strobel sock of the footwear.

**[0008]** In one embodiment, when the lateral arm extends downward to the insole of the footwear, the lateral arm is directly or indirectly affixed to the top surface of a sole along the medial side of the insole of the footwear; when the medial arm extends downward to the insole of the footwear, the medial arm is directly or indirectly affixed to the top surface of the insole along

the lateral side of the insole of the footwear.

**[0009]** In one embodiment, when the lateral arm and the medial arm extend downward to the footbed of the footwear, the end of the lateral arm and the end of the medial arm are attached to the footbed of the footwear.

**[0010]** In one implementation, when the lateral arm and the medial arm extend downward to the strobel sock of the footwear, the end of the lateral arm and the end of the medial arm are attached to the strobel sock of the footwear.

**[0011]** In one implementation, the rigid heel structural element is made of a polymer material.

**[0012]** In one implementation, the polymer material is Hytrel thermoplastic polyester elastomer block copolymer or thermoplastic polyurethane.

**[0013]** In one implementation, the rigid heel structural element is covered by a fabric, textile material, leather, or polyurethane or other known polymer plastics in the art.

**[0014]** In one implementation, a compressible layer is provided on the inner side of the rigid heel structural element; the compressible layer covers the upper rear portion, partially covers the medial and lateral arms, and gradually tapers or terminates along the inner side of the medial arms and the inner side of the lateral arms.

**[0015]** In one implementation, the convex curvature has an upper surface that faces upward.

**[0016]** In the second aspect, an embodiment of the present application provides a footwear, comprising the footwear strap provided according to any embodiment of the present application. The shoe provided by the embodiment of the present application can be a sandal, or a leather shoe, a cloth shoe, a sports shoe and the like with heel straps.

**[0017]** In one implementation, the rigid heel structural element is connected to a footbed or insole of the shoe through an L-shaped anchor.

**[0018]** The above summary is for illustrative purpose only and is not intended to limit the present application in any way. In addition to the illustrative aspects, implementations and features described above, further aspects, implementations and features of the present application will be readily apparent by referring to the drawings and the following detailed description.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0019]** In the drawings, unless otherwise specified, the same reference numerals indicate the same or similar components or elements throughout several drawings. These drawings are not necessarily drawn to scale. It should be understood that these drawings depict only some implementations disclosed in accordance with the present application and shall not be deemed as limiting the scope of the present application;

**[0020]** FIG. 1A shows a three-dimensional schematic diagram of a rigid heel structural

element according to a first embodiment of the present application;

**[0021]** FIG. 1B shows a three-dimensional schematic diagram of a rigid heel structural element according to a second embodiment of the present application;

**[0022]** FIG. 1C shows a schematic diagram of a cross-section of a cross-section of the rigid heel structural element according to the first embodiment of the present application;

**[0023]** FIG. 2 shows a schematic diagram of a L-shaped anchor viewed from top perspective according to an embodiment of the present application;

**[0024]** FIGS. 3A-3C are schematic diagrams showing the different structures obtained after the footwear strap according to an embodiment of the present application is assembled to the footwear respectively.

## DETAILED DESCRIPTION

**[0025]** In the following text, only certain exemplary embodiments are briefly described. As can be recognized by those skilled in the art, the described embodiments can be modified in various different ways without departing from the spirit or scope of the present application. Accordingly, the drawings and the description are to be regarded as illustrative and non-limiting in nature.

**[0026]** Hereinafter, a rigid heel structural element 100 included in a footwear strap according to an embodiment of the present application will be described with reference to FIGS. 1A-1C, 2 and 3A-3C.

**[0027]** As shown in FIGS. 1A-1C, the footwear strap includes a strap element (not shown in FIGS. 1A-1C) and a rigid heel structural element 100. Among others, the strap element can be a fabric or textile material that wraps the rigid heel structural element 100. The rigid heel structural element 100, disposed inside the strap element, is configured to be structures and materials which facilitate easily inserting the foot into the footwear and bear the pressure from the foot, so as to prevent the rigid heel structural element 100 from collapsing under the pressure of the foot. Referring to FIGS. 1A and 1B, FIG. 1A shows a three-dimensional schematic diagram of a rigid heel structural element according to a first embodiment of the present application. Specifically, FIG. 1A shows a left side perspective view of the rigid heel structural element 100 according to the first embodiment of the present application. As shown in FIG. 1A, the rigid heel structural element 100 consists of a first part and a second part, wherein the first part includes an upper rear portion 101, a connecting arm 102 and a convex curvature 103, and the second part is an L-shaped anchor 104. The connecting arm 102 is connected with the upper rear portion 101. The connecting arm 102 includes a lateral arm 102A and a medial arm 102B, wherein both the lateral arm 102A and the medial arm 102B are arranged substantially in the lateral direction. The connecting arm 102 can be connected to the L-shaped anchor 104. As can be seen from FIG. 1A, the aforesaid four

parts 101 to 104 are generally arranged in the order from the upper right direction to the lower left direction.

**[0028]** FIG. 1B shows a three-dimensional schematic diagram of a rigid heel structural element according to a second embodiment of the present application. The difference between the rigid heel structural element of the second embodiment and the rigid heel structural element of the first embodiment is that the connecting arm of the rigid heel structural element in the second embodiment itself is L-shaped. Specifically, FIG. 1B shows a left side perspective view of the rigid heel structural element 100 according to the second embodiment of the present application. As shown in FIG. 1B, the rigid heel structural element 100 includes an upper rear portion 101, a connecting arm 102, and a convex curvature 103. The connecting arm 102 is L-shaped. The connecting arm 102 is connected with the upper rear portion 101. The connecting arm 102 includes a lateral arm 102A and a medial arm 102B, wherein the medial arm 102B is substantially orthogonal to the lateral arm 102A.

**[0029]** In an implementation, the lateral arm 102A and the medial arm 102B can be integrally formed. In another alternative implementation, the lateral arm 102A and the medial arm 102B can be assembled or connected together after being manufactured separately.

**[0030]** FIG. 1C shows a schematic diagram of a cross-section of a first part of the rigid heel structural element of the first embodiment. As shown in FIG. 1C, the first part of the rigid heel structural element 100 includes an upper rear portion 101, a connecting arm 102 and a convex curvature 103. The connecting arm 102 includes a lateral arm 102A and a medial arm 102B, wherein both the lateral arm 102A and the medial arm 102B are arranged substantially in the lateral direction. The first part of the rigid heel structural element 100 extends from the upper rear portion 101 to the lower left direction in an arc-shaped manner, wherein the connecting arm 102 of the first part is connected with the upper rear portion 101 of the first part. As shown by the two arrows in FIG. 1C, the inner surface of the rigid heel structural element 100 has a certain thickness, and can be provided with a compressible layer, such as a foam cushioning element. The compressible layer can be affixed at the upper rear portion 101 of the rigid heel structural element 100 and at least a portion of the connecting arm 102.

**[0031]** Among others, the upper rear portion 101 is used to wrap the heel part of the foot. When the footwear strap is assembled to the footwear, the upper rear portion 101 extends in a direction from the position where the footwear contacts the heel toward the position where the footwear contacts the toe. As shown in FIS. 1GA-1C, the rigid heel structural element 100 extends from the upper rear portion 101 to the left in an arc-shaped manner. Meanwhile, when the footwear strap is assembled to the footwear, the upper rear portion 101 inclines downward along the direction from the position where the footwear contacts the heel toward the position where the

footwear contacts the toe.

**[0032]** Among others, the downward inclined part of the upper rear portion 101 has a convex curvature 103, the convex face of which protrudes toward the foot when the footwear strap is assembled to the footwear. Further, the shape of the convex curvature 103 is adapted to the heel to facilitate easily receiving the heel part. The convex curvature 103 has an opening, and the lower portion of the opening of the convex curvature 103 faces the sole of the footwear when the footwear strap is assembled to the footwear.

**[0033]** In one embodiment, the convex curvature 103 has an upper surface that faces upward.

**[0034]** In one implementation, the rigid heel structural element 100 can be at least partially deformed instantly when the foot applies downward pressure on the rigid heel structural element 100. For example, the lateral arm 102A and the medial arm 102B can partially bend towards the rear of the footwear or bend outward to widen the opening of the footwear or both when the foot applies downward pressure on the rigid heel structural element 100. Due to the rigid, yet sufficiently elastic material used in the integrally molded rigid heel structural element 100, the rigid heel structural element 100 can restore to its original undeformed shape and position when the downward pressure applied by the foot is released.

**[0035]** In one embodiment, as shown in FIG. 1A, the rigid heel structural element includes two connecting arms 102, and each connecting arm 102 can include a medial arm 102B and a lateral arm 102A connected with the medial arm 102B. The connecting arm 102 can be connected to a vertical portion of the L-shaped anchor 104. A horizontal portion of the L-shaped anchor 104 is used to be connected with a footbed, an insole, or a strobel sock in the assembled state. The anchor can also be of various suitable shapes, such as J-shape and T-shape.

**[0036]** In one implementation, as shown in FIG. 1B, the rigid heel structural element includes two connecting arms 102, and each connecting arm 102 can include a medial arm 102B and a lateral arm 102A connected with the medial arm 102B. The connecting arm 102 is L-shaped. The end of the L-shape of the connecting arm 102 includes an upper surface and a lower surface, wherein the lower surface is at least partially connected to the top surface of the insole, and the upper surface is at least partially connected to the underside surface of the footbed.

**[0037]** In one implementation, when the footwear strap is assembled to the footwear, the lateral arm 102A and the medial arm 102B extend downward to the footbed, insole or strobel sock of the footwear.

**[0038]** In one implementation, when the lateral arm 102A and the medial arm 102B extend downward to the insole of the footwear, the lateral arm 102A is directly or indirectly affixed to the top surface of the sole along the medial side of the insole of the footwear; the medial arm 102B is directly or indirectly affixed to the top surface of the insole along the lateral side of the insole of

the footwear.

**[0039]** In one implementation, when the lateral arm 102A and the medial arm 102B extend downward to the footbed of the footwear, the end of the lateral arm 102A and the end of the medial arm 102B can be attached to the footbed of the footwear through an anchor.

**[0040]** In one implementation, when the lateral arm 102A and the medial arm 102B extend downward to the strobel sock of the footwear, the end of the lateral arm 102A and the end of the medial arm 102B are attached to the strobel sock of the footwear.

**[0041]** In one implementation, the rigid heel structural element 100 is made of a polymer material.

**[0042]** In one implementation, the polymer material is Hytrel thermoplastic polyester elastomer block copolymer (such as DuPont Hytrel) or a Thermoplastic Polyurethane (TPU).

**[0043]** In one implementation, the rigid heel structural element 100 is covered by a fabric or textile material. Among others, the fabric and textile material can be the same as the textile material of the outer surface of the shoe.

**[0044]** In one implementation, a compressible layer is provided on the inner side of the rigid heel structural element 100. The compressible layer can be a foam cushioning element, affixed at the rear portion of the rigid heel structural element 100, and at least a portion of the inner side of the medial arm and the inner side of the lateral arm. The compressible layer covers the upper rear portion, partially covers the medial arm and the lateral arm, and gradually tapers or terminates along the inner side of the medial arm and the inner side of the lateral arm. The compressible layer can be compressed during the insertion of the foot into the footwear. After the foot is inserted into the footwear, the compressible layer can expand to its original uncompressed state or at least partially expand to its original uncompressed state. The compressible layer can be located around the ankle and assist in securing the foot within the footwear.

**[0045]** In the second aspect, in an embodiment of the present application, a footwear is further provided, comprising the footwear strap provided according to any embodiment of the present application.

**[0046]** In one implementation, a rigid heel structural element is connected to a footbed or insole of the footwear through an L-shaped anchor.

**[0047]** FIG. 2 shows a schematic diagram of a L-shaped anchor 200 viewed from top perspective according to an embodiment of the present application; The L-shaped anchor 200 can be attached to the connecting arm 102 of the rigid heel structural element 100. The L-shaped anchor 200 can be molded separately. Referring to FIG. 2, the L-shaped anchor 200 can include a vertical portion 201 and a horizontal portion 202 depending on the L shape, wherein the vertical portion 201 corresponds to the long side of the L shape and the horizontal portion 202 corresponds

to the short side of the L shape.

**[0048]** FIGS. 3A-3C are schematic views showing the different structures obtained after the footwear strap according to an embodiment of the present application is assembled in the footwear respectively. In one implementation, referring to FIG. 3A, in the assembled state, the connecting arm 301 of the footwear strap 300 is bonded to the vertical portion of the L-shaped anchor 302 in the assembled state, so as to secure the heel to the sandal shown in the figure. As shown in FIG. 3B, which is the bottom view of the footwear, the L-shaped anchor 302 is connected with the footbed or insole. The horizontal portion of the L-shaped anchor 302 is not shown, because the L-shaped anchor is covered by the sole 306. In one implementation, the connecting arm 301 of the footwear strap 300 is L-shaped. The L-shaped connecting arm 301 can be connected with the footbed or insole. As shown in FIG. 3B, which is the bottom view of the footwear, the L-shaped connecting arm 301 is connected to the footbed or insole. The L-shaped end of the L-shaped connecting arm 301 is not shown, because it is covered by the sole 306.

**[0049]** In an embodiment, as shown in FIG. 3C, the footwear can incorporate a pair of boards 304 affixed to the underside surface of the footbed or insole 303. The boards 304 can be further located on the medial and lateral sides of the footbed or insole 303 and spaced away from each other. The L-shaped anchor 302 can be connected to the boards 304. The boards 304 can be constructed of cellulose (such as texon). The bottom 305 of the sandal strap of the sandal shown in FIG. 3C can also be connected to the footbed or insole 303, or to the boards 304. The sole 306 as shown in FIG. 3B can be formed by covering the sole portion on the insole 303.

**[0050]** In another embodiment, the L-shaped anchor may be connected to a footbed, insole or strobel sock.

**[0051]** In an embodiment, the connecting arm 301 of the footwear strap 300 is L-shaped, and the L-shaped connecting arm 301 can be connected to the boards 304.

**[0052]** In another embodiment, the L-shaped connecting arm may be connected to a footbed, insole or strobel sock.

**[0053]** In the description of the present specification, it should be understood that, the orientation or positional relationships indicated by the terms “central”, “vertical”, “horizontal”, “length”, “width”, “thickness”, “upper”, “lower”, “front”, “rear”, “left”, “right”, “vertical”, “horizontal”, “top”, “bottom”, “inner”, “outer”, “clockwise”, “counterclockwise”, “axial”, “radial”, “circumferential”, *etc.* are based on the orientation or positional relationships shown in the accompanying drawings and are only for facilitating the description of the present application and simplifying the description, rather than indicating or implying that the device or element referred to must have a particular orientation or be constructed and operated in a particular orientation, and therefore will not be interpreted as limiting the present application.

**[0054]** In addition, the terms “first” and “second” are only used for descriptive purposes, and cannot be understood as indicating or implying relative importance or implicitly indicating the number of indicated technical features. Therefore, the features defined with “first” and “second” can include one or more of these features explicitly or implicitly. In the description of the present application, the word “multiple” means two or more than two, unless otherwise specifically defined.

**[0055]** In the present application, unless otherwise specified and limited, terms “mounting”, “connecting”, “connection”, “fix” and the like should be understood in a broad sense, for example, they can be a fixed connection, a detachable connection, or being integrated; can be a mechanical connection or an electrical connection; can be a direct connection or an indirect connection through a medium; and can be communication between interiors of two elements or interactive relationship of two elements. For those of ordinary skill in the art, the specific meaning of the terms mentioned above in the present application should be construed according to specific circumstances.

**[0056]** In the present application, unless otherwise specified and defined, the first feature being “on” or “under” the second feature can include that the first feature and the second feature are in direct contact, and can also include that the first feature and the second feature are not in direct contact but in contact with each other through another feature between them. Moreover, the first feature being “on”, “above”, and “over” the second feature includes that the first feature is directly above and obliquely above the second feature, or merely means that the first feature is horizontally higher than the second feature. The first feature being “underneath”, “below”, and “under” the second feature includes that the first feature is directly below and obliquely below the second feature, or merely means that the first feature is horizontally lower than the second feature.

**[0057]** The above disclosure provides many different implementations or examples to realize different structures of the present application. In order to simplify the disclosure of the present application, the components and arrangements of particular examples are described above. Of course, they are merely examples and are not intended to limit the present application. In addition, the present application can repeat reference numerals and/or reference letters in different examples. Such repetition is for the purpose of simplicity and clarity, and does not in itself indicate a relationship between the various implementations and/or arrangements discussed.

**[0058]** The above is only the detailed description of the present application, but the scope of protection of the present application is not limited thereto. Any person skilled in the art can readily conceive of various changes or substitutions within the technical scope disclosed in the present application, which should be encompassed by the scope of protection of the present application. Therefore, the scope of protection of the present application should be subject to the scope of protection of the claims.

What is claimed is:

1. A footwear strap, characterized in that, comprising: a strap element, and a rigid heel structural element, wherein the rigid heel structural element is disposed inside the strap element, and the rigid heel structural element comprises an upper rear portion;when the footwear strap is assembled to a footwear, the upper rear portion extends in a direction from the position where the footwear contacts the heel toward the position where the footwear contacts the toe, and inclines downward of the footwear; the upper rear portion has a convex curvature which is adapted to the shape of the heel so as to facilitate easily receiving the heel; and when the footwear strap is assembled to the footwear, an inner lower portion of the convex curvature faces an opening of the footwear.

2. The footwear strap according to claim 1, characterized in that, the rigid heel structural element comprises two connecting arms.

3. The footwear strap according to claim 2, characterized in that, each of the two connecting arms comprises a medial arm and a lateral arm connected with the medial arm, the lateral arm and the medial arm are integrally molded, and the lateral arm is connected with the upper rear portion.

4. The footwear strap according to claim 3, characterized in that, when the footwear strap is assembled to the footwear, the lateral arm extends downward to a footbed, insole or strobel sock of the footwear, and the medial arm extends downward to the footbed, insole or strobel sock of the footwear.

5. The footwear strap according to claim 4, characterized in that, when the lateral arm extends downward to the insole of the footwear, the lateral arm is directly or indirectly affixed to the top surface of a sole along the medial side of the insole of the footwear; and when the medial arm extends downward to the insole of the footwear, the medial arm is directly or indirectly affixed to the top surface of the insole along the lateral side of the insole of the footwear.

6. The footwear strap according to claim 4, characterized in that, when the lateral arm and the medial arm extend downward to the footbed of the footwear, the end of the lateral arm and the end of the medial arm are attached to the footbed of the footwear.

7. The footwear strap according to claim 4, characterized in that, when the lateral arm and the medial arm extend downward to the strobel sock of the footwear, the end of the lateral arm and the end of the medial arm are attached to the strobel sock of the footwear.

8. The footwear strap according to claim 1, characterized in that, the rigid heel structural element is made of a polymer material.

9. The footwear strap according to claim 8, characterized in that, the polymer material is Hytrel thermoplastic polyester elastomer block copolymer or thermoplastic polyurethane.

10. The footwear strap according to claim 1, characterized in that, the rigid heel structural element is covered by a fabric, textile material, leather, or polymer plastic.

11. The footwear strap according to claim 4, characterized in that, a compressible layer is provided on the inner side of the rigid heel structural element, wherein the compressible layer covers the upper rear portion, partially covers the medial arm and the lateral arm, and gradually tapers or terminates along the inner side of the medial arm and the inner side of the lateral arm.

12. The footwear strap according to claim 1, characterized in that, the convex curvature has an upper surface that faces upward.

13. A footwear, characterized by comprising the footwear strap according to any one of claims 1 to 12.

14. The footwear according to claim 13, characterized in that, the rigid heel structural element is connected to a footbed, insole, or strobel sock of the footwear through an L-shaped anchor, wherein the L-shape anchor is integrally molded with the rigid heel structural element or separately formed and attached to the rigid heel structural element.