HEEL STRAP DEVICE AND METHOD TO USE THE SAME

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ABSTRACT

A heel strap device configured to secure a person’s heel to a shoe and properly guide the heel back into the shoe. The device has an elastic band that provides both a downward and forward force. The band has a bottom section, heel section, left side section, and right side section. The bottom section is affixed to the sole of a shoe. In a separate embodiment, the band also has a nub affixed to the top of the heel section that is configured to prevent the band from slipping down on the heel and to provide aesthetic benefits to the device. In another embodiment, the device is integrated with a shoe instead of being separately attached to the shoe insole.
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CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the priority benefit of U.S. Provisional Application 61/927958 filed Jan. 15, 2014, which is herein incorporated by reference in its entirety.

TECHNICAL FIELD

[0002] This disclosure is related to shoe insert devices. More particularly, the disclosure discusses a device and method to secure a person’s heel within a shoe and prevent the heel from slipping out of the shoe.

BACKGROUND

[0003] The statements in this section merely provide background information related to the present disclosure. Accordingly, such statements are not intended to constitute an admission of prior art.

[0004] Many times when walking with shoes, a person’s heel can slip out of one of the shoes. In some cases, the person’s heel doesn’t re-enter the shoe properly. This can be painful to the person and can also damage the shoe. This phenomenon occurs especially frequently with women’s high-heeled shoes. Since a different shoe design is not always preferable, there exists a need to better secure a person’s heel to the shoe or at least properly guide the heel back into the shoe.

BRIEF SUMMARY OF THE INVENTION

[0005] In one embodiment, the device to secure a person’s heel to a piece of footwear and properly guide the heel back into the footwear comprises: an elastic band that comprises a bottom section, a left-side section, a right-side section, and a heel section.

[0006] In an alternate embodiment, the left-side section comprises a front left arm and a back left arm, and the right-side section comprises a front right arm and a back right arm.

[0007] In an alternate embodiment, the heel section has a raised surface configured to increase a frictional resistance between the device and the footwear.

[0008] In an alternate embodiment, the bottom section further comprises a top cloth cover on a top portion of the bottom section and a bottom cloth cover on a bottom portion of the bottom section.

[0009] In an alternate embodiment, the bottom cloth cover is configured to attach to an insole of a shoe.

[0010] In an alternate embodiment, the device further comprises a shoe.

[0011] In an alternate embodiment, the band further comprises one or more nub(s) attached to a top of the heel section. The nub(s) can be a rhinestone, rubber stop, or the like.

[0012] In an alternate embodiment, the device further comprises a thin layer of fabric on top of the bottom section, wherein the thin layer of fabric is configured to keep a foot comfortable. The thin layer of fabric can be a breathable material.

[0013] In an alternate embodiment, the device further comprises a thin layer of foam beneath the front section, wherein the thin layer of foam is configured to distribute shear forces more evenly at the shoe insole. Alternatively, the material of construction can be rigid plastic or the like instead of foam.

[0014] In an alternate embodiment, the device further comprises a hook and loop fastener (e.g. Velcro®) which is configured to attach the device to the shoe insole.

[0015] In an alternate embodiment, the shoe insole is not required and the elastic band is configured to attach directly to the interior of a shoe insole assembly.

[0016] In an alternate embodiment, the elastic band further comprises a clasp which is configured to vary the length of the elastic band.

[0017] The elastic band mid-section material of construction can be cloth or another material which has a higher frictional coefficient than cloth. This decreases slippage of the elastic band and helps the wearer keep their foot in the shoe. Note that the elastic band mid-section does not have to be elastic. Its purpose is to maintain contact with the heel, while the elastic portion provides force.

[0018] The elastic band maintains force on the heel in a predominantly forward direction, with an increasing amount of force in the downward direction as the foot exits the shoe. This increasing downward force helps to guide the foot back into the shoe when necessary.

[0019] The anchors that attach the device to the shoe may be clasps, ties, Velcro®, or any adhesive, or some combination thereof. The means to attach the elastic strap to the anchors can differ, e.g., using Velcro® clasps, ties, or adhesives, or the like.

[0020] A method to use an embodiment of the device described above comprises: affixing the bottom section to a shoe insole assembly; and inserting a person’s foot into the device.

[0021] The scope of the invention is defined by the claims, which are incorporated into this section by reference. A more complete understanding of embodiments on the present disclosure will be afforded to those skilled in the art, as well as the realization of additional advantages thereof, by consideration of the following detailed description of one or more embodiments. Reference will be made to the appended sheets of drawings that will first be described briefly.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] A clear understanding of the key features of the invention summarized above may be had by reference to the appended drawings, which illustrate the method and system of the invention, although it will be understood that such drawings depict preferred embodiments of the invention and, therefore, are not to be considered as limiting its scope with regard to other embodiments which the invention is capable of contemplating. Accordingly:

[0023] FIG. 1 is a perspective top view of a device according to one embodiment.

[0024] FIG. 2 is a perspective bottom view of a device according to one embodiment.

[0025] FIG. 3 shows a device according to one embodiment integrated with a shoe.

[0026] FIG. 4 is a device according to one embodiment with nubs and integrated with a shoe.

[0027] FIG. 5 is an exploded view showing the device attached to a shoe insole.

[0028] FIG. 6 is a cut-away view showing the device in a retracted position.

[0029] FIG. 7 is a cut-away view showing the device in a stretched position while the shoe and device are being worn around the heel of a wearer.

[0030] FIG. 8 is a perspective view of the device according to another embodiment.
As required, detailed embodiments of the present invention are disclosed herein; however, it is to be understood that the disclosed embodiments are merely exemplary of the invention that may be embodied in various and alternative forms. The figures are not necessarily to scale; some features may be exaggerated or minimized to show details of particular components. Therefore, specific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a representative basis for teaching one skilled in the art to variously employ the present invention.

There are several examples of prior art related to this present application. The most common can be found in any shoe store, or pharmacy, and is generally referred to as a heel pad or heel grip. This product is unsatisfactory, while it makes the shoe tighter, it does not establish a connection between the foot and the shoe. These products oftentimes exacerbate the problem by causing blisters and rubbing on the constrained foot. Several inventors have tried to overcome the shortcomings of this design, and these are their patents.

While prior art designs have tried to provide a way of retaining the wearer’s heel in a shoe, these prior art designs are not functional for a majority of shoe designs. For example, there are several prior art designs that are required to loop around an anchor point, such as the “heel” of a high-heeled shoe in order for this design to function properly and effectively. One can only attach this invention to a shoe with a clearly defined high heel thereby limiting its scope of use to only one type of shoe. Another limiting factor for these prior art designs is that this strap is designed to be worn “around” the shoe and is consequently very visible and may distract from the original design of the shoe. Additionally, the straps that are worn outside the shoe only provides vertical tension between foot and heel, creating a downward force but not a forward force.

Other prior art designs that are designed to be located inside of shoes and include an elastic strip designed to be attached only to the shoe counter. These designs provide minimal retention and do not provide downward force for retaining the wearer’s heel within the shoe.

FIG. 1 is a perspective top view of the heel retention device 100 according to one embodiment of the present application. The heel retention device 100 includes a heel section 101, a front left arm 102, a back left arm 103, a front right arm 104, a back right arm 105, a top cloth cover 106 on a top portion of the bottom section (hidden), a bottom cloth cover 107 on a bottom portion of the bottom section (hidden), and a raised surface 108 on the heel section 101. The left and right sides are symmetrical and left and right sides have been identified based on the view of the drawing from the viewer’s point of view, however when the device is worn the right and left sides may be reversed, however the left and right sides are symmetrical and can be interchanged depending on the point of view in relation to the device.

The heel retention device 100 is an elastic retainer that can be made of stretchy rubber, elasticized cloth, or stretchy plastic, it may be a solid band or several smaller bands interwoven, or a net-like structure. In another embodiment, the heel retention device 100 can be constructed of a thermoplastic elastomer or like material with a Shore-A value between 10 and 30. In one embodiment, the Shore-A value is approximately 18. For the purposes of this disclosure, the Shore-A of a material is determined using the ASTM D2240 Type A standard, or of a like-performing cloth elastic, urethane, or rubber. The tensile strength at break is 600 psi and the tensile elongation at break is 600% as determined by the test method ASTM D412. The heel retention device 100 may be formed to be transparent, opaque, or colored.

The heel section 101, the front left arm 102, and the front right arm 104 are joined together to form a first U-shaped loop 120 defining an opening end for receiving the wearer's heel and foot. In an un-stretched or retracted position, loop may be have half-circle, half-diamond, half-ellipse, or any other suitable shape. The shape of heel retention device 100 may increase the surface area which is in contact with the heel, increasing friction and decreasing slippage between the heel retention device 100 and the wearer's heel.

The heel section 101 and the left back arm 103 and right back arm 105 are also joined to form a second U-shaped loop 124. The back left arm 103, and back right arm 105 function to exert a primarily downward force on the foot into the receiving shoe cavity. The two back arms 103, 105 form a continuous loop that meets underneath the top cloth 106. In another embodiment, they do not form a continuous loop and separate ends attach to the sole assembly at various points forward of the shoe counter.

The heel retention device 100 also includes a raised surface 108 formed along a rearward surface 112 of the heel section 101. In one embodiment, the raised surface 108 is formed of a plurality of raised protrusions that extend from the rearward surface that is otherwise generally smooth. The raised surface 108 on the heel section 101 functions to exert a frictional resistance between the rearward surface 112 of the heel section 101 and the inside of the shoe counter, making it less likely that the foot and/or the heel retention device 100 will come up and out of the back of the shoe cavity. It is also contemplated that the raised surface 108 may have any shape or surface finish that increases frictional resistance between the shoe and the heel retention device 100.

FIG. 2 is a perspective bottom view of a device embodiment. Shown are the footwear device 100, heel section 101, front left arm 102, back left arm 103, front right arm 104, back right arm 105, top cloth cover 106 on a top portion of the bottom section (hidden), a bottom cloth cover 107 on a bottom portion of the bottom section (hidden), and a raised surface 108 on the heel section 101.

FIG. 3 illustrates a heel retention device 100 installed in a shoe 200, according to one embodiment. The heel retention device 100 is designed to be worn with ‘closed heel’ shoes where the wearer’s heel is covered by the shoe. The heel retention device 100 may be worn in any shoe such as high heels, pumps, loafers or any shoe where the wearer requires greater retention to prevent the shoe from slipping off. As shown in FIG. 3, the heel retention device is in the retracted position and is un-stretched.

An example of a closed heel shoe 200 is shown in FIG. 3 where the shoe has a sole assembly 210 including an outer-sole 212 and an insole 214. The outer-sole 212 forms an outer surface of the shoe that is designed to contact the ground. The outer-sole 212 may be formed of leather, or rubber or any suitable material that provides durability and traction, for example, for the particular shoe.

The shoe insole 214 forms the inner surface of the shoe that contacts the bottom of the wearer’s foot. The insole 214 can be made of leather, foam, gel, or materials generally used in the manufacture of existing insoles. The insole 214 can also be a half insole or partial insole that extends along a
portion of the sole assembly 210. The insole 214 can be attached at any point to the shoe or the outer-sole 212, or the insole 214 may be removable.

[0044] A typical shoe also includes a shoe upper 216 attached to the sole assembly and defining a cavity for receiving the foot of the wearer. The shoe upper 216 extends between the toe end 218 toe end and a counter end 220. The toe end 218 may be enclosed to cover the toes of the wearer or be open-toed to reveal a portion of the wearer’s toes. The shoe counter 220 encloses the wearer’s heel.

[0045] FIG. 4 is a device embodiment that includes nubs 401 defined along a top surface of the heel retention device 100. The nubs 401 may be formed of the same elastic material as the device 100 or may be an aesthetic attachment. The nubs 401 on the device 100 are spaced apart on the top surface of the device 100 and the nubs 401 are spaced apart from the bottom surface of the device 100. The nubs 401 can be positioned above the top of the shoe to prevent the heel retention device 100 from slipping too low on the wearer’s foot.

[0046] FIG. 5 is an exploded view showing one example of how the heel retention device 100 may attach to the sole assembly of a shoe 200. The heel retention device 100 includes a fastening assembly 150. The fastening assembly 150 includes the top cover 106 and the bottom cover 107. As seen in this exploded view, the heel retention device 100 also includes a bridge portion 109 (also described as “bottom section” in previous figures). The bridge portion 109 connects front arms 102, 104 to form the first continuous loop 154. The bridge portion 109 also connects back arms 103, 105 to form the second continuous loop 158. The bridge portion 109 extends in the longitudinal direction and connects the two continuous loops 154, 158.

[0047] The bottom cover 107, along with the top cover 106 functions to sandwich the bridge portion 109 in between bottom cover 107 and the top cover 106 in order to keep a consistent distance between the two continuous loops. Since the elastomeric material of the heel retention device 100 has a high amount of elasticity, a mechanical attachment is provided to securely attach the heel retention device. For this reason, the bridge portion 109 has been made narrow, leaving space for the top cover 106 and the bottom cover 107 are adhered together with a strong adhesive, and trap the bridge portion 109 and two continuous loops 154 and 158 into position. Alternatively, the top cover 106 and bottom cover 107 may be attached together with a heat stak or any other suitable process that securely sandwiches and retains the bridge portion 109 of the heel retention device 100.

[0048] The top cover 106 is made of a cloth material such as leather, suede or any other breathable material that is comfortable to the wearer’s foot. In one embodiment, the bottom cover is 107 is cloth material having a fastener material 152 disposed on a lower side. The fastener material 502 may be a hook and loop fastener material that attaches the heel retention device 100 into the shoe cavity. The corresponding fastener material 503 that connects to the fastener material 152, is attached to the shoe’s sole assembly 210. The fastener material 152 may have hook material, while the corresponding fastener material may be loop material, or vice versa. In one embodiment, the corresponding fastener material may be attached to the sole assembly 210 with an adhesive or an industrial strength tape which comes already installed on a bottom side 155 being opposite of the loop fastener material 153.

[0049] FIG. 6-7 illustrate a cut-away view of the heel retention device 100 installed in a shoe 200. FIG. 6 illustrates the heel retention device 100 in a retracted, or un-stretched position and FIG. 7 shows the heel retention device 100 in a stretched position around the heel of a person when the shoe 200 is worn.

[0050] The heel retention device 100 is adapted to be attached to the sole assembly 210. The heel retention device 100 may be attached to the insole 214, or may attached to the outer sole 212 where the insole 214 is removed.

[0051] The heel retention device 100 is attached to the sole assembly of the shoe 200 at least at the forward end 110 of the front arms 102, 104 to define the attachment location 230. The attachment location 230, but can be moved forward or backwards depending on the elastic tension that is desired by the wearer of the device 100. In one embodiment, the attachment location 230 is positioned along the sole assembly 210 at a mid-section or adjacent an arch of the wearer’s foot.

[0052] The forward end 110 of the front arms 102, 104 is positioned approximately 2.75 inches forward of the back end 219 of the top cover 106 and the bottom cover 107 which have been aligned and adhered together, but can be within a range of 2 inches to 6 inches forward of the back end 219. In one embodiment the wearer will place the place the heel retention device 100 into the shoe cavity so that the back rounded end of the top cloth 106 and bottom cloth 107 are flush with the shoe counter. In this configuration, the front end 110 of front arms 102, 104 will be approximately 2.75 inches forward of the back of the shoe, where the shoe counter meets the sole assembly. However, the heel retention device 100 may be attached to the sole assembly at any point.

[0053] The front left arm 104, and front right arm 102 function to exert both forward and downward pull toward the attachment location 230. In one embodiment, front arms 104, 102 are connected by the bridge portion 109 underneath the top cover 106 to form the continuous loop 154 underneath the foot. In another embodiment, the front arms 102, 104 terminate at the forward end 110 and do not form a continuous loop and separate ends 110 attach to the sole assembly 210 at various points forward of the shoe counter 220.

[0054] The front arms 104, 102 are longer than the back arms 103, 105 and subsequently have more stretch and can a greater amount when worn. In a retracted position, with no tension, the U-shaped loop 120 formed by the front arms 102, 104 will measure approximately 6 inches, but may range in size from 5 inches to 7.5 inches. In a stretched position, the U-shaped loop 120 formed by the front arms 102, 104 may range from 7 inches to 13 inches depending on the size and circumference of the foot they encompass.

[0055] The back arms 103, 105 are shorter than the front arms 102, 104 and consequently have less stretch. In a retracted position, with no tension, the continuous loop 124 of the back arms 103, 105 will measure approximately 5 inches, but may range in size from 4 inches to 6 inches. In a stretched position, the U-shaped loop 124 of the back arms may range from 6.5 inches to 7.5 inches depending on the size and circumference of the foot they encompass.

[0056] FIG. 6 is an embodiment that shows the elastic strap in a retracted position with no stretch nor tension. The heel section 101 rests inside the receiving shoe cavity and remains unseen behind the shoe uppers 216. The device 100 is positioned inside the shoe so that with no tension the heel section
101 of the device 100 is approximately 1.5 inches from the top of shoe counter 220, but can be within the range of 1 inch to 3 inches.

[0057] FIG. 7 is an embodiment that shows the device 100 in a fully stretched position, as if it has been pulled around the back of the wearer's foot, providing the forward and downward pull that will keep the foot inside the shoe cavity, and flexibly attached to the shoe at the forward attachment points 230, and the rear attachment points 232. The top of the heel section 101, remains below the top rim of the shoe counter 220, and remains hidden from plain view on the inside of the shoe uppers 216 when the wearer's stands with weight in the heel of the shoe. In another embodiment, a hub 401—which can be made of a clear elastomeric material, or a design element: rhinestone, bow or the like, at the very top of the heel section 101, peeks above the top rim of the shoe counter 220 functioning as a stop to prevent the heel section 101 from slipping off of the wearer's heel and down towards the sole assembly.

[0058] As shown in FIG. 7, the insole 214 can also be a half insole or partial insole that extends only along a portion of the sole assembly 210. The insole 214 can be attached at any point to the shoe or the outer-sole 212, or the insole 214 may be removable.

[0059] FIG. 8 is an embodiment that shows the device 100 with a single continuous loop 801 made up of a right arm 802 and left arm 803 and heel section 101. This elastic band will be sandwiched in between top cover 106 and bottom cover 107 just as previous embodiments have been put together.

[0060] While the present invention has been described with reference to exemplary embodiments, it will be readily apparent to those skilled in the art that the invention is not limited to the disclosed or illustrated embodiments but, on the contrary, is intended to cover numerous other modifications, substitutions, variations, and broad equivalent arrangements.

What is claimed is:

1. A shoe comprising:
   a sole assembly having attached outer-sole and insole portions;
   a shoe upper attached to the sole assembly defining a foot receiving cavity having a toe end and a counter end; and
   an elastic retainer having a U-shaped loop portion, the elastic retainer located within the foot receiving cavity with ends of the U-shaped loop portion attached to the sole assembly at an attachment location significantly forward of shoe upper counter end so that the U-shaped loop portion extends rearward and upward from the attachment location;

2. The shoe of claim 1 wherein the elastic retainer forms a closed loop having an attachment region connected to the sole assembly, with a remaining portion of the closed loop forming the U-shaped loop portion.

3. The shoe of claim 1 wherein the U-shaped loop portion has two free ends attached to the sole assembly within the foot receiving cavity on opposite lateral sides of the wearer's foot.

4. The shoe of claim 1 further comprising a heel connected to the outer-sole below the shoe upper counter end, wherein the attachment location of the elastic retainer is located near or forward of a forward edge of the heel.

5. The shoe of claim 1 wherein the elastic retainer further comprises a transverse portion extending between the sides of the U-shaped loop portion to underlie the heel of the wearer's foot limiting the upward movement of U-shaped loop portion relative to the wearer's foot.

6. The shoe of claim 1 wherein the elastic retainer comprises a clear elastomeric material.

7. The shoe of claim 1 wherein the elastic retainer does not extend above the shoe upper when the wearer's heel is bearing weight on the sole assembly.

8. A device to secure a person's heel to a piece of footwear and properly guide the heel back into the footwear, the device comprising:
   an elastic band that comprises a bottom section, a left-side section, a right-side section, and a heel section.

9. The device of claim 9, wherein the left-side section comprises a front left arm and a back left arm, and the right-side section comprises a front right arm and a back right arm.

10. The device of claim 9, wherein the heel section has a raised surface configured to increase a frictional resistance between the device and the footwear.

11. The device of claim 9, wherein the bottom section further comprises a top cloth cover on a top portion of the bottom section and a bottom cloth cover on a bottom portion of the bottom section.

12. The device of claim 9, wherein the bottom cloth cover is configured to attach to an insole of a shoe.

13. The device of claim 9, wherein the band further comprises at least one attached to a top of the heel section.

15. A method to use the device of claim 9, the method comprising:
   affixing the bottom section to a shoe insole; and
   inserting a person's foot into the device.

16. A heel retention device configured to be attached to a shoe, the device comprising:
   an elastic band formed of an elastomeric material shaped as a U-shaped loop defined between forward ends, wherein the forward ends are configured to attach to an sole assembly of a shoe at an attachment location significantly forward of a shoe counter end so that the U-shaped loop portion extends rearward and upward from the attachment location, and stretched between a retracted position and a stretched position,

   wherein in the retracted position, the U-shaped loop portion is spaced away from the shoe counter end, and in the stretched position, the U-shaped loop portion elastically stretched rearward adjacent the shoe counter end and about a heel of the wearer's foot to urge the wearer's foot forward and downward into engagement with the sole assembly.