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US PROVISIONAL PATENT APPLICATION

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FOR

**FOOTWEAR PROTECTION INSERT**

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**FIELD OF THE INVENTION**

5           The present invention relates to a footwear insert suitable for preventing lace bite and providing added protection for a wearer's foot, and more particularly to an insert placed under the laces and above the tongue of an item of footwear to create an extra layer of padding, protecting the wearer of the footwear from lace bite and other injury.

10       **BACKGROUND OF THE INVENTION**

          The term "lace-bite" as utilized herein refers to a phenomenon wherein the shoe laces of an item of footwear are tightly tied, and possibly over-tightened, to the extent that the laces dig or bite into the ankle or shin area of the wearer. Wearers of ice skates, including figure skates and hockey skates, most often experience this phenomenon. Other forms of footwear more prone to causing lace-bite include those items having a substantial lace portion to the extent that laces cover the ankle area of the wearer, and especially those items having a lace portion that covers a portion of the shin of the wearer. Wearers of the footwear that experience lace-bite often do so as a result of the tongue of the footwear providing inadequate protection. Most often, the tongue is fabricated of the same material as other upper portions of the footwear, and thus is inadequate for preventing lace-bite because such extra protection is not required at other upper portions of the footwear.

25           Lace-bite itself is caused by the excessive or extreme tightening of the laces against the tongue of the footwear, and correspondingly the foot, ankle, or shin of the wearer of the footwear. The excessive or extreme tightening of the laces is often desired for footwear, especially in instances of athletic footwear, to provide necessary support for the foot, ankle, and or shin of the wearer during the athletic activity. In some instances, such as with youths, the laces of the footwear are threaded and tightened by an adult or other person better able to tighten the laces than the younger wearer of the

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footwear. As such, an inherent conflict often occurs between attempting to tighten the laces sufficiently to provide needed support, and avoiding painful lace-bite. When the laces of the footwear are tightened by someone other than the wearer, the person tightening the laces is less able to determine whether the laces are adequately tightened or over-tightened. As such, when over-tightened, lace-bite can result. In addition, laces that are tightened can experience repositioning as the footwear is worn that can lead to some portions of the lace becoming looser and other portions becoming tighter and potentially causing lace-bite.

10 In addition, a wearer of athletic footwear can sometimes experience injury while participating in athletics. For example, a hockey player can sometimes injure their foot as a result of hockey sticks or hockey pucks hitting the lace portion of the skate.

#### **SUMMARY OF THE INVENTION**

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There is a need for a device for protecting the wearer of various forms of footwear from tightly tied laces and thus preventing or substantially reducing lace-bite. In addition, there is a need for a device used in conjunction with athletic footwear to provide added protection of a wearer's foot in the lace portion of the footwear. The present invention is directed toward further solutions to address these needs.

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#### **BRIEF DESCRIPTION OF THE DRAWINGS**

The present invention will become better understood with reference to the following description and accompanying drawings, wherein:

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**FIG. 1** is a diagrammatic illustration of a hockey skate suitable for use with one embodiment of the present invention;

**FIG. 2A** is a diagrammatic illustration of a footwear protection insert according to one embodiment of the present invention;

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**FIG. 2B** is a perspective view of the footwear protection insert of **FIG. 2A**, according to one embodiment of the present invention;

**FIG. 2C** is a cross-sectional view of an alternate embodiment of the footwear protection insert, according to one embodiment of the present invention;

5 **FIG. 3A** is a diagrammatic illustration of the hockey skate of **FIG. 1** shown with the footwear protection insert of **FIGS. 2A** and **2B** in use, according to one aspect of the present invention;

**FIG. 3B** is an alternate view of the hockey skate and footwear protection insert of **FIG. 3A**, according to one aspect of the present invention; and

10 **FIGS. 4A, 4B, 4C, 4D, 4E, and 4F** are diagrammatic illustrations of a method of attaching the footwear protection insert to the hockey skate, according to one aspect of the present invention.

#### **DETAILED DESCRIPTION**

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An illustrative embodiment of the present invention relates to a footwear protection insert for protecting the wearer of an item of footwear from lace-bite and other potential foot injuries. The footwear protection insert attaches to, or is inserted in, the item of footwear between the lace and the tongue of the footwear or foot of the  
20 wearer. The footwear protection insert provides additional padding and protection against tightly tied laces, re-distributing lace forces across a larger surface area, and thus making the use of the footwear more comfortable to the wearer. The footwear protection insert additionally enables the wearer to tie the laces more tightly than might otherwise be possible (due to lace-bite), thus resulting in the footwear providing more  
25 support for the wearer. Furthermore, the footwear protection insert provides added protection of the wearer's foot, from such potential injury causing impacts as being hit by a hockey stick or hockey puck.

30 **FIGS. 1** through **4F**, wherein like parts are designated by like reference numerals throughout, illustrate an example embodiment of a footwear protection insert according to the present invention. Although the present invention will be described with

reference to the example embodiment illustrated in the figures, it should be understood that many alternative forms can embody the present invention. One of ordinary skill in the art will additionally appreciate different ways to alter the parameters of the embodiments disclosed, such as the size, shape, or type of elements or materials, in a manner still in keeping with the spirit and scope of the present invention.

**FIG. 1** is a diagrammatic illustration of footwear 10. The footwear 10 is shown configured to receive a footwear protection insert 12 (see **FIG. 2A**) in accordance with the present invention. A lace 14 on the footwear 10 has been fed initially through two eyelets 16 of the footwear 10. A tongue 18 of the skate 10 remains in the footwear 10 in the general position corresponding to when the footwear 10 is fully laced. One of ordinary skill in the art will appreciate that the footwear 10 shown is a hockey skate. However, the present invention is not limited to use with a hockey skate, or even with a skate. Rather, the present invention is useful to prevent lace-bite in any type of footwear having laces that can be tightened, or some other form of strap that can be tightened. Accordingly, the hockey skate illustrated is representative of footwear having laces or other strap-like mechanism for tightening the footwear around the foot of a wearer. Such laces 14 can be of conventional form, or can be wider, narrower, Velcro®, buckled strap, or other strap-like configuration, as is anticipated by the present invention.

**FIGS. 2A** and **2B** are illustrations of the footwear protection insert 12 in accordance with one embodiment of the present invention. The footwear protection insert 12 has at least one, and in the illustrative example two, mounting apertures 20. The footwear protection insert 12 has a generally trapezoidal shape, which substantially mimics the shape covered by the laces 14 of conventional footwear 10. As such, the footwear protection insert 12 is most effective when footwear protection insert 12 substantially covers or matches the area of the laces 14. The footwear protection insert 12 also maintains dimensions that substantially cover the area of the tongue 18 of the footwear 10.

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In the specific exemplary embodiment illustrated, the footwear protection insert 12 has approximate dimensions of between 6 inches and 9 inches in length, between 2 inches and 4 inches in width at a first end 22, and between 1 inch and 3 inches in width at a second end 24. These example dimensions are configured for an adult hockey skate.

5 As previously mentioned, the exact dimensions of the footwear protection insert 12 are adjusted to match the specific type and size of footwear 10 upon which the footwear protection insert 12 is to be attached.

Furthermore, in the exemplary embodiment illustrated, the footwear protection

10 insert 12 is formed of synthetic foam padding having a thickness of approximately 0.5 inches to 1.25 inches. One of ordinary skill in the art will appreciate that the footwear protection insert 12 can be formed of a number of different materials, including fabric, synthetics, natural fibers, plastics, foam, rubber, composites, and the like.

15 In addition, and as illustrated in **FIG. 2C**, the footwear protection insert 12 can have multiple layers of materials forming the footwear protection insert 12, including a plastic or rubber layer that provides a stiffer surface against which the laces 14 can be tightened. In the example embodiment illustrated, the footwear protection insert 12 has three layers, however, the footwear protection insert 12 can have a fewer or greater

20 number of layers. A first layer 26, a second layer 28, and a third layer 30, can be made of same, similar, or different materials. For example, the first layer, being on the outside of the footwear protection insert 12, can be formed of a more rigid material, while the second layer 28 can be foam padding, and the third layer 30 can be leather or cloth. Accordingly, the footwear protection insert 12 can have a less rigid layer, such as foam

25 padding, and more rigid layer, such as plastic or rubber, to re-distribute forces resulting from lace tightening across a larger surface. Regardless of the materials used to form the footwear protection insert 12, the end result is that the footwear protection insert 12 acts to re-distribute compression forces generated by the laces 14 over a larger area, thus preventing or substantially reducing lace-bite. Without the footwear protection insert

30 12, focused areas of lace 14 can place painful pressure against the foot, ankle, or shin of the wearer. The provision of the footwear protection insert 12 creates additional surface

area and foam cushion to re-distribute the focused areas of lace 14, and the corresponding compression forces, to reduce or eliminate lace-bite.

As mentioned, the footwear protection insert 12 is generally trapezoidal in shape, more specifically an elongated trapezoidal shape. The wider end, in the illustrative embodiment the first end 22, is positioned at an upper portion of the footwear 10. The narrower end, in the illustrative embodiment the second end 24, is positioned at a lower portion of the footwear 10, closer to the toe portion of the footwear. The two mounting apertures 20 are provided at the second end 24 to attach the footwear protection insert 12 to the footwear 10 using the laces 14. The two mounting apertures hold the footwear protection insert 12 in place during use of the footwear 10. Additional mounting apertures, or alternatively loops or other fastening means, can be used to attach the footwear protection insert 12 to the footwear, and hold the footwear protection insert 12 in place.

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**FIGS. 3A** and **3B** show the footwear protection insert 12 positioned in the footwear 10 as intended during use. The footwear protection insert 12 fits between the laces 14 and the tongue 18 of the footwear 10. The footwear protection insert 12 attaches to the footwear 10 at the mounting apertures 20 by having the laces 14 threaded therethrough as will be further discussed in detail below. The footwear protection insert 12 is additionally held in place on the footwear by the frictional forces of the tightened laces 14 against the tongue 18, as the footwear protection insert 12 is wedged therebetween. As can be seen in the illustrative figures, the footwear protection insert 12 can extend beyond the region or area of the laces 14 if desired. Alternatively, the footwear protection insert 12 can more closely match the area covered by the laces 14. If the footwear protection insert 12 is sized and dimensioned to extend beyond the laces 14 at the first end 22, the exposed first end 22 provides a handle for the footwear protection insert 12 to be pulled upon, or re-positioned, should the footwear protection insert 12 shift during use of the footwear. The exposed first end 22 of the footwear protection insert 12 can also be useful as a handle or grip when initially positioning the footwear protection insert 12 while the laces 14 are being threaded and tightened.

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**FIGS. 4A** through **4F** inclusive illustrate a method of attaching or installing the footwear protection insert 12 in the footwear 10 in accordance with one embodiment of the present invention. **FIG. 4A** shows the footwear 10 with the lace 14 threading through the first two eyelets 16 prior to threading through a first of the two mounting apertures 20 of the footwear protection insert 12. After threading through a first of the two mounting apertures 20 of the footwear protection insert 12, the lace threads through a third eyelet 16 of the footwear 10. An opposite end of the lace 14 then threads through a second of the mounting apertures 20 of the footwear protection insert 12, and subsequently through a fourth eyelet 16 of the footwear 10.

At this point in the process of attaching the footwear protection insert 12 to the footwear 10, the laces 14 are tightened to bring the footwear protection insert 12 down against the tongue 18 of the footwear 10 as shown in **FIG. 4C**. Then, as shown in **FIGS. 4D, 4E, and 4F**, the laces 14 are laced through the eyelets 16 of the footwear 10, progressing to an upper portion of the footwear 10, at which point the laces 14 are tied together as shown previously in **FIG. 3A**. As the laces 14 are threaded through the eyelets 16 of the footwear 10, the laces 14 can be tightened. Alternatively, the laces 14 of the footwear 10 can be threaded through all of the desired eyelets, and then tightened prior to being tied together. Alternate forms of lacing and tightening of laces will be appreciated by those of ordinary skill in the art, and are anticipated to be functional with the footwear protection insert 12 of the present invention.

As shown, the footwear protection insert 12 is positioned between the laces 14 and the tongue 18 of the footwear. Thus, as the laces 14 are threaded and tightened, the laces 14 apply compression and friction forces against the footwear protection insert 12, the tongue, and eventually the foot (not shown) of the wearer of the footwear 10. Absent the footwear protection insert 12, laces 14 that are tightened to an extreme (over-tightened) can cut into the tongue 18 of the footwear 10, and consequently the foot, ankle, or shin of the wearer. With the footwear protection insert 12, the forces created by the excessive over-tightening of the laces are cushioned, withstood, and re-distributed

by the footwear protection insert 12 in addition to the tongue 18, in a manner such that painful lace-bite against the foot, ankle, or shin of the wearer is substantially reduced or eliminated. In addition, the footwear protection insert 12 provides added protection of the wearer's foot against impact injuries caused by objects hitting the lace portion of the footwear, such as hockey sticks or hockey pucks.

The footwear protection insert 12 provides additional protection and layers to prevent or substantially reduce the effects of over-tightening laces, i.e., lace-bite. The footwear protection insert 12 is separate from the footwear to which it can be attached, thus, the footwear protection insert 12 can be transferred between multiple different items of footwear. The footwear protection insert 12 is not required to be permanently installed or attached to the footwear, unlike the tongue that comes with the footwear. As such, the footwear protection insert 12 can be packaged separately or together with a particular item of footwear. The footwear protection insert 12 operates in addition to the tongue to re-distribute lace forces in a manner that ultimately reduces the forces applied against the foot, ankle, or shin of the wearer. As mentioned previously, the tongue often is constructed of a same or substantially similar material and padding as other portions of the footwear upper section. As such, the tongue that is a part of the footwear often falls short of providing adequate protection against lace-bite. The footwear protection insert 12 of the present invention provides the wearer with the ability to achieve tighter lacing, and thus more support for athletic activities, while avoiding or substantially reducing the occurrence of lace-bite by re-distributing lace forces. The footwear protection insert 12 likewise protects the wearer of the footwear from impact injuries that can result during athletic activities when the lace portion of the footwear is impacted by items such as hockey sticks or hockey pucks.

Numerous modifications and alternative embodiments of the present invention will be apparent to those skilled in the art in view of the foregoing description. Accordingly, this description is to be construed as illustrative only and is for the purpose of teaching those skilled in the art the best mode for carrying out the present invention. Details of the structure may vary substantially without departing from the spirit of the

present invention, and exclusive use of all modifications that come within the scope of the appended claims is reserved. It is intended that the present invention be limited only to the extent required by the appended claims and the applicable rules of law.

**CLAIMS**

What is claimed is:

- 5 1. A device for re-distributing forces in an item of footwear, comprising:  
an elongate insert sized and dimensioned for positioning between a shoelace and  
a tongue of the item of footwear;  
wherein the elongate insert re-distributes forces resulting from a tightened  
shoelace, substantially reducing forces applied to an occupant of the item of footwear.
- 10 2. The device according to claim 1, wherein the elongate insert further comprises at  
least one mounting aperture through which the shoelace can pass to attach the elongate  
insert to the item of footwear.
- 15 3. The device according to claim 1, wherein the elongate insert is substantially  
trapezoidal in shape.
4. The device according to claim 1, wherein the elongate insert is formed of at least one  
layer of material.
- 20 5. The device according to claim 4, wherein the at least one layer of material comprises  
foam padding.
6. The device according to claim 1, wherein the elongate insert is formed of a plurality  
25 of layers.
7. The device of claim 6, wherein at least one of the plurality of layers comprises foam  
padding.
- 30 8. The device of claim 6, wherein at least one of the plurality of layers comprises a rigid  
material.

9. The device of claim 1, wherein the elongate insert is configured to provide protection to the occupant of the footwear from forces applied to the occupant resulting from impact of an object against the footwear.