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Corcoran-Tadd

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(54) **LACE ADJUSTMENT SYSTEM AND SHOE**

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A43C 1/00 (2006.01)

(52) **U.S. Cl.**
CPC ***A43C 1/003*** (2013.01)

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See application file for complete search history.

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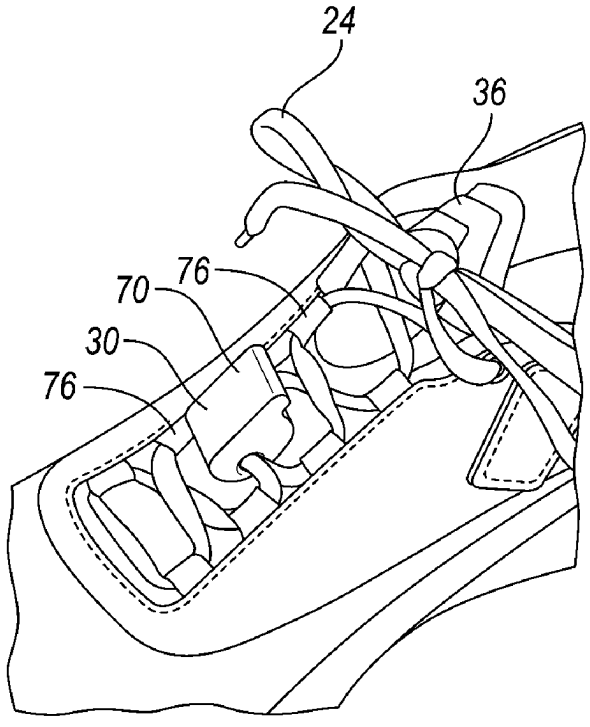
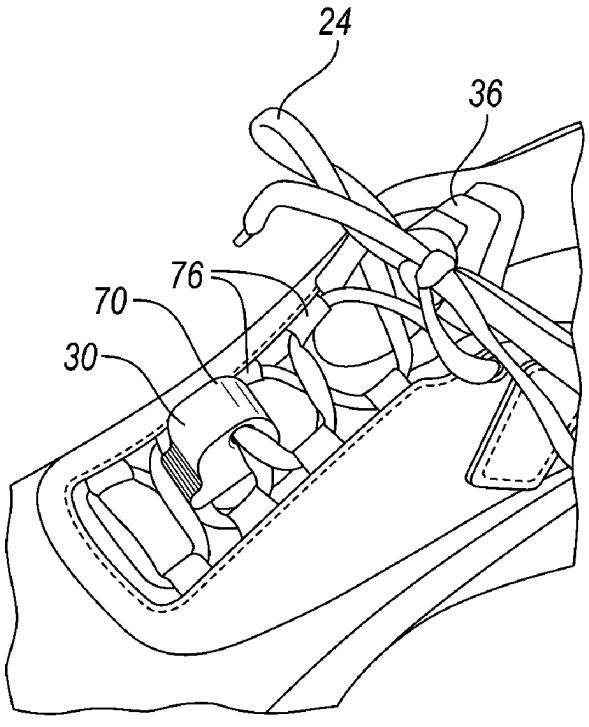
(57) **ABSTRACT**

An article of footwear is provided with a lace adjustment device that provides bi-modal lace adjustment. A toggle body has a lace aperture positioned eccentrically. The toggle body rotates about the central axis to move between a first position and second position. In the second position, the at least one lace has a greater amount of tightness than when the toggle body is in the first position. The toggle body has a first surface and a second surface opposite the first surface, and the lace aperture is positioned adjacent the first surface. The toggle body rests on the first surface when in a first loose position, and when the toggle body is in a second tighter position, it rests on the second surface.

20 Claims, 6 Drawing Sheets





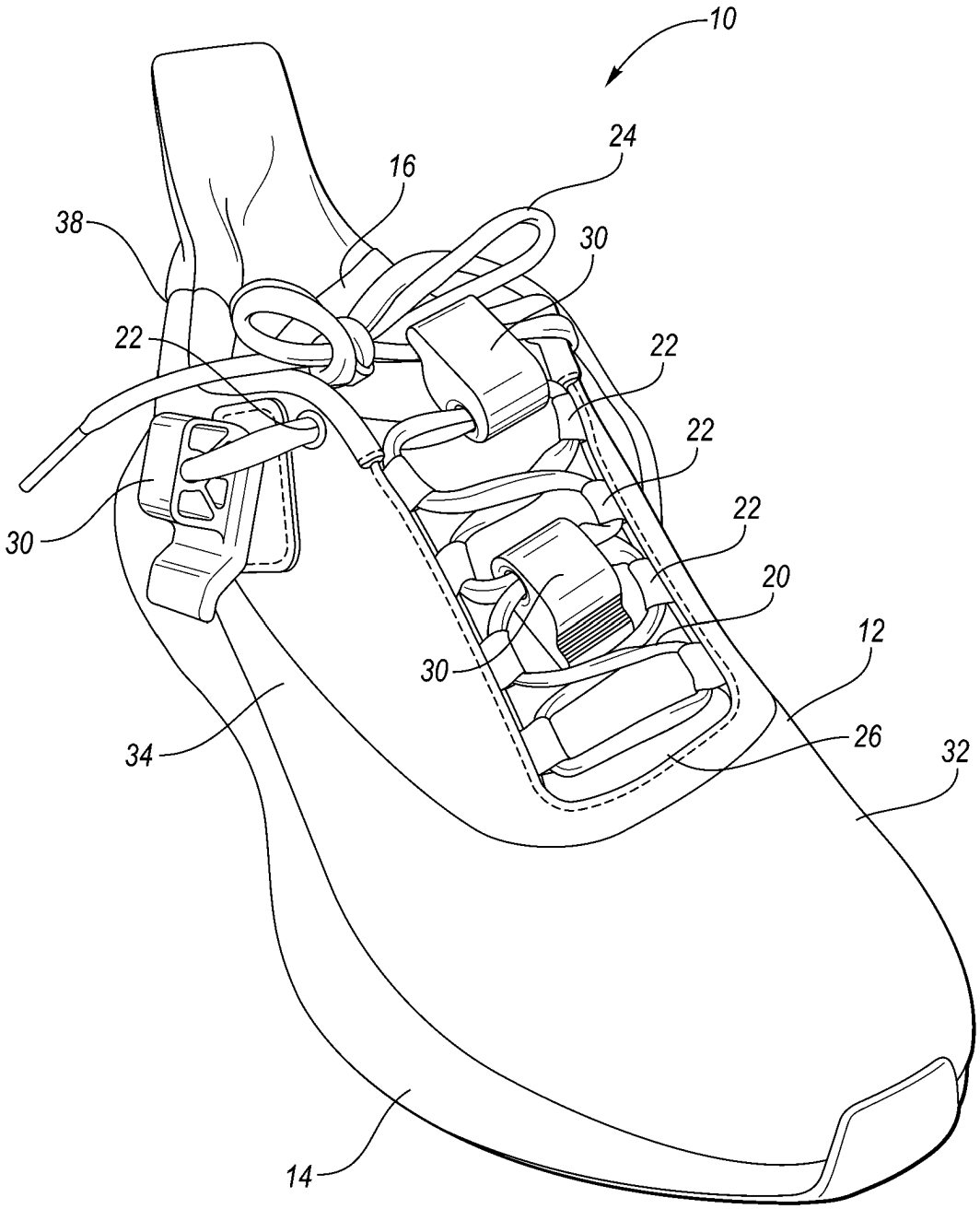
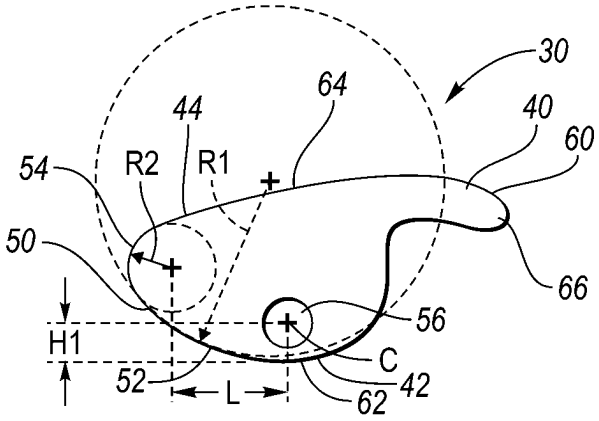
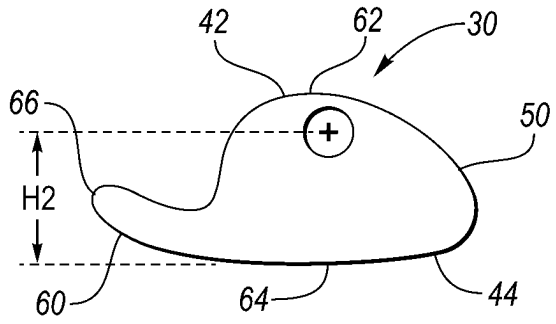


FIG. 1



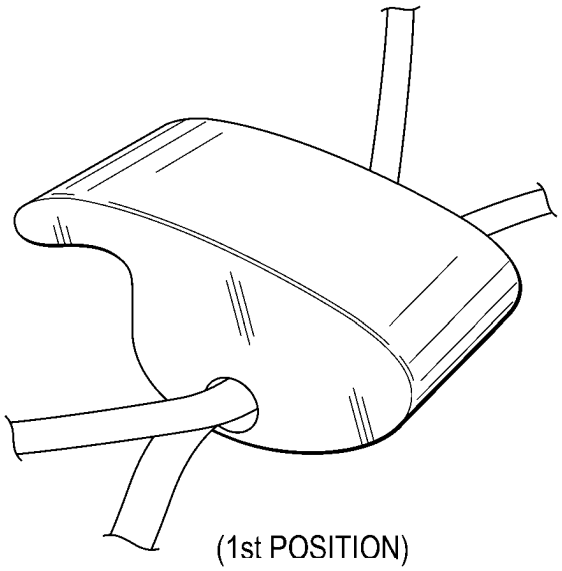
(1st POSITION-LOOSER)

FIG. 2



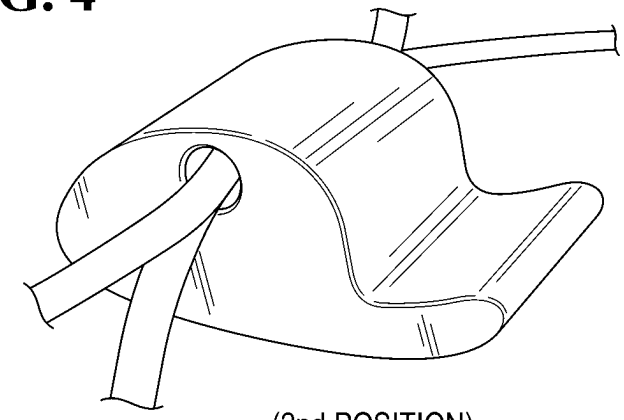
(2nd POSITION-TIGHTER)

FIG. 3



(1st POSITION)

FIG. 4



(2nd POSITION)

FIG. 5

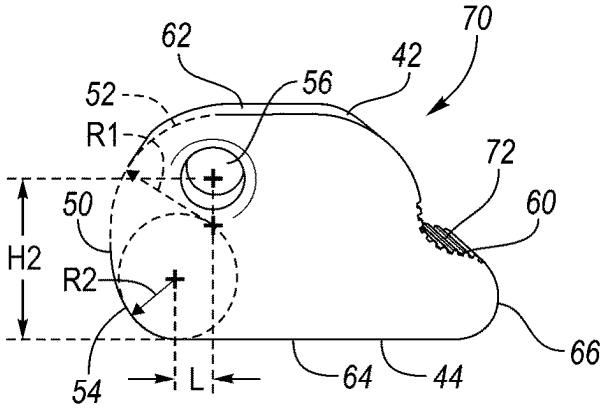


FIG. 6

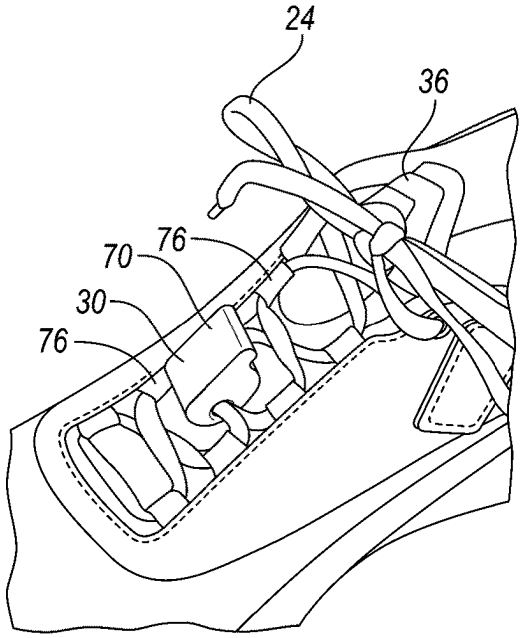


FIG. 7

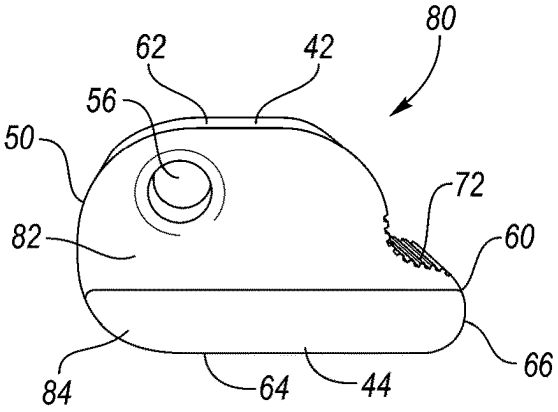


FIG. 9

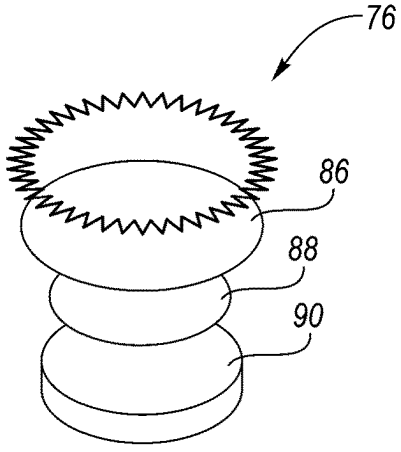


FIG. 10

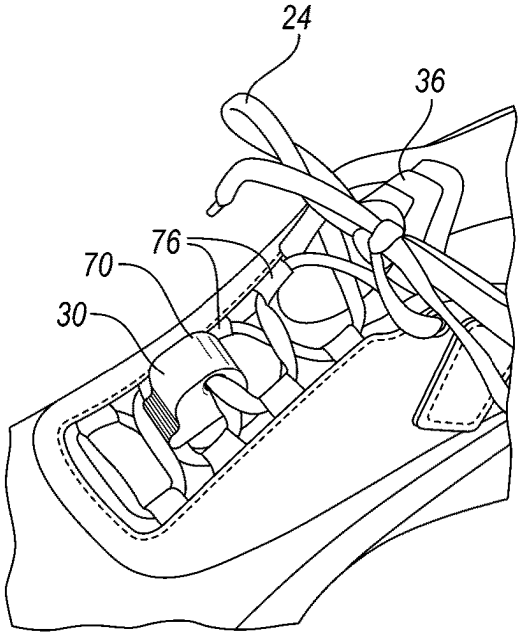


FIG. 8

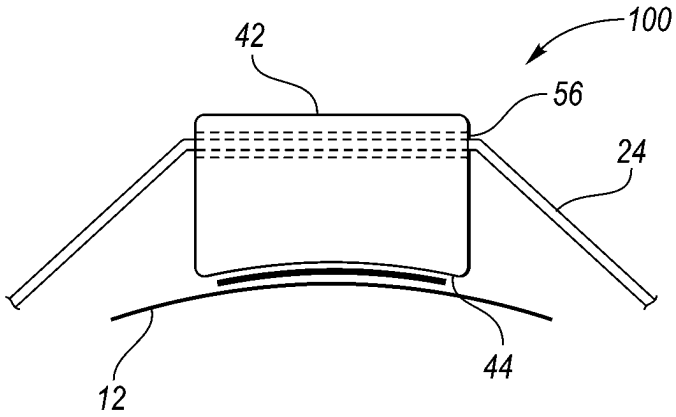


FIG. 11

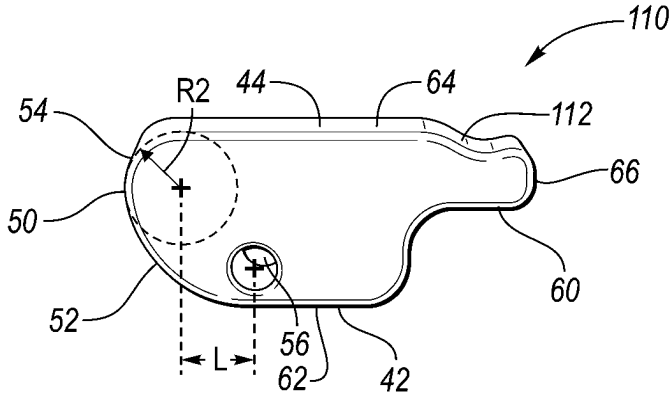


FIG. 12

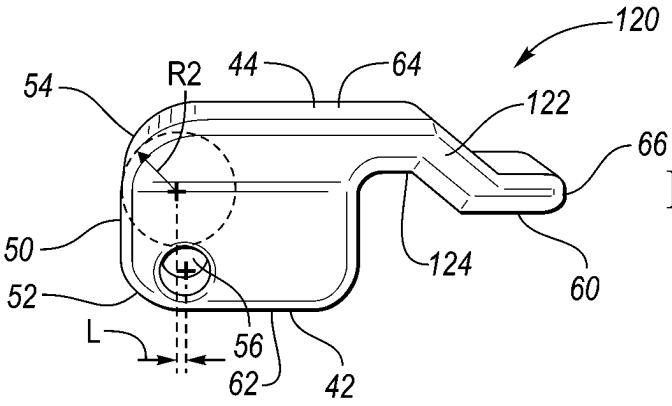


FIG. 13

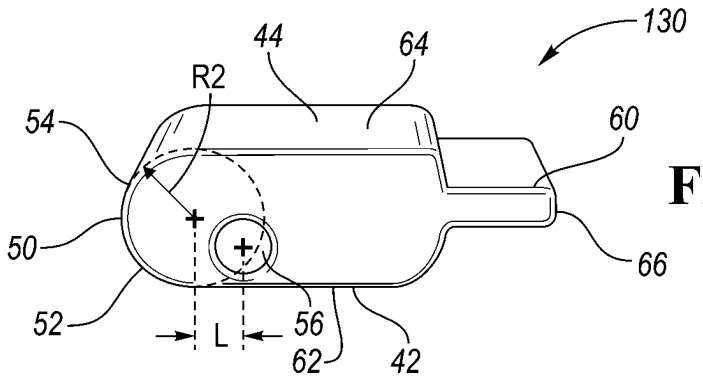


FIG. 14

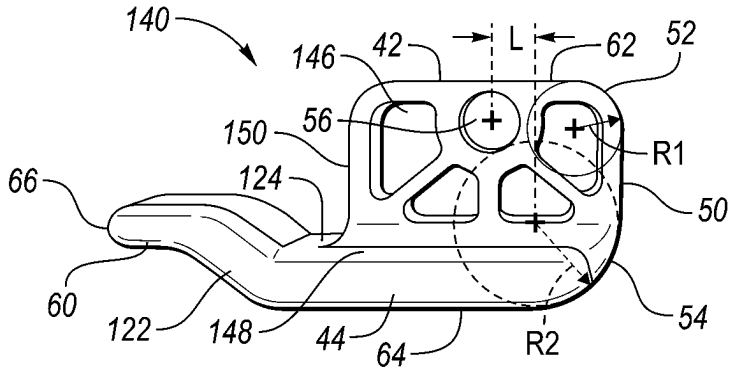


FIG. 15

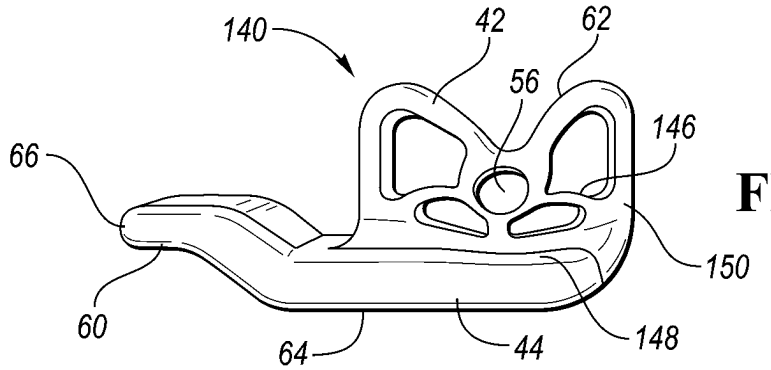


FIG. 16

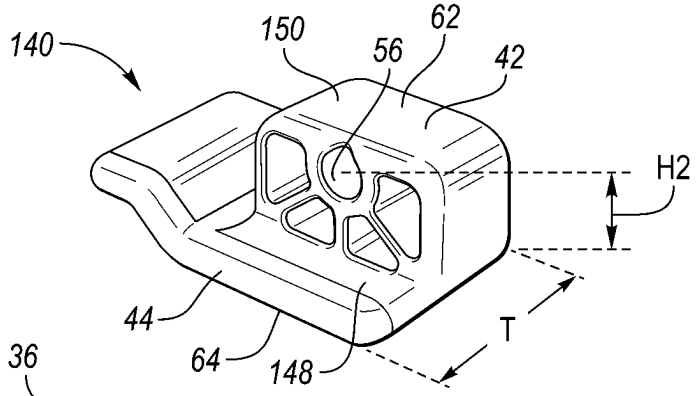


FIG. 17

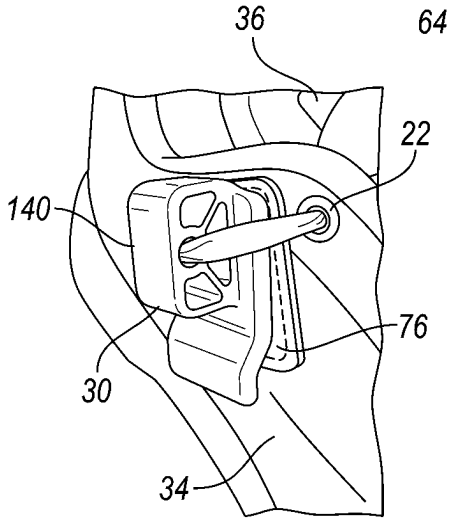


FIG. 18

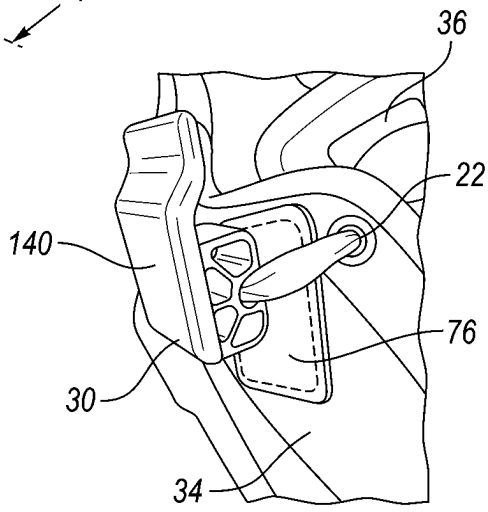


FIG. 19

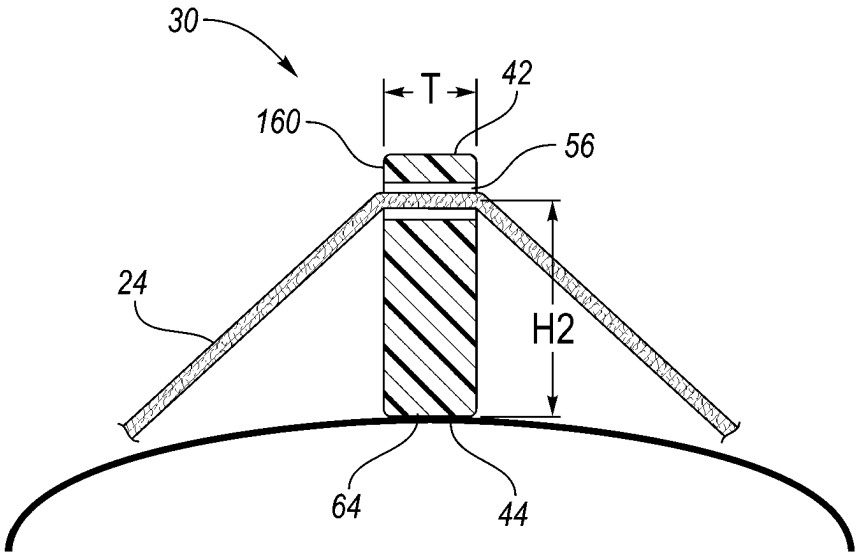


FIG. 20

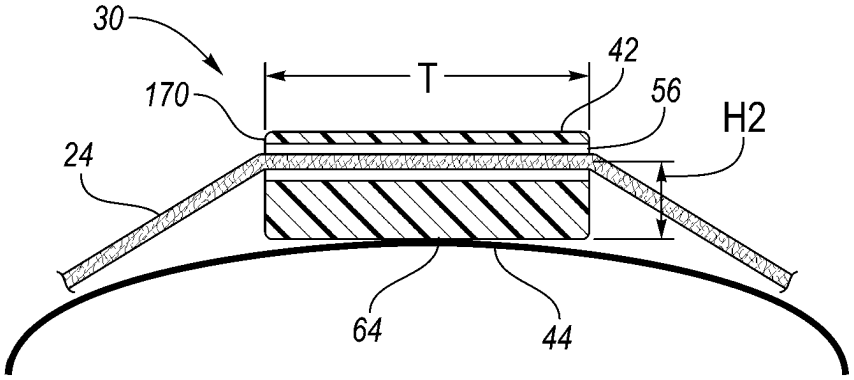


FIG. 21

LACE ADJUSTMENT SYSTEM AND SHOE

TECHNICAL FIELD

The present application relates to footwear with a lacing system and having an adjustment device for varying the tightness.

BACKGROUND

Athletic shoes and other footwear typically include an upper to support a foot and the sole structure. The uppers may have laces, or straps, cables or other fasteners, to adjust the fit of the upper around the foot. The laces may be tightened and tied to secure the upper around the user's foot.

Various tightening systems allow the uppers to be adjusted. Typically, these systems allow the tightness of the uppers to be opened to allow entry and removal of the user's foot, and then to incrementally increase the tightness to achieve the desired fit of the upper around the foot.

SUMMARY

In one or more embodiments, a lace adjustment device for footwear is provided. The lace adjustment device has a toggle body movable between two positions to provide bi-modal lace adjustment. The toggle body has a first surface and a second surface opposing the first surface where the toggle body is in a first position when resting on the first surface and is in a second position when resting on the second surface. A curved face extends between the first surface and second surface in a height direction. The curved faces has a complex contour defined by a first curvature adjacent the first surface, and a second curvature adjacent the second surface. A lace aperture extends through the toggle body for receiving at least one lace. A central axis of the aperture is eccentric relative to the first and second surfaces and is spaced apart in the length direction from the curved face. The toggle body rotates about the central axis of the aperture to move between the first and second position.

In one or more embodiments, the aperture is closer to the first surface of the toggle body than the second surface.

In one or more embodiments, the toggle body has a tab protruding opposite the curved face. The tab is configured for gripping the toggle body and to move between the first position and the second position. In one or more embodiments, the tab extends adjacent the second surface.

In one or more embodiments, the second surface has a second contact area being greater than a first contact area.

In one or more embodiments, the toggle body is formed of a first part being a first material and a second part formed of a second material being softer than the first material.

In one or more embodiments, an article of footwear is provided having a shoe upper having a first and second lace retention features. At least one lace extends between the first and second lace retention features. A toggle body provides bi-modal lace adjustment. The toggle body has a lace aperture extending through the toggle body for receiving the ace where a central axis of the aperture is positioned eccentrically. The toggle body rotates about the central axis to move between a first position and second position, where in the second position, the at least one lace has a greater amount of tightness than when the toggle body is in the first position. The toggle body has a first surface, and the lace aperture is positioned adjacent the first surface. A second surface is opposite the first surface on the toggle body. The toggle body rests on the first surface when in a first loose position, and when the toggle body is in a second tighter position, it rests on the second surface.

In one or more embodiments, the toggle body has a curved face extending between the first surface and second surface in a height direction. In one or more embodiments, the lace aperture is offset by a length dimension from a radial center of the curved surface.

In one or more embodiments, the curved face has a complex curvature defined by a first curvature positioned adjacent the first surface, and a second curvature positioned adjacent the second surface. In one or more embodiments, the lace aperture is offset by a length dimension from a radial center of the second curvature.

In one or more embodiments, the footwear has a reaction pad disposed on the shoe upper. The reaction pad has a surface for supporting the first and second surface of the of the toggle body In one or more embodiments, the reaction pad is positioned along at least one of a tongue, medial surface, lateral surface or heel of the shoe upper. In one or more embodiments, the reaction pad comprises a cushion layer to provide comfort.

In one or more embodiments, the footwear has a plurality of toggle bodies positioned at a plurality of locations along the at least one lace.

In one or more embodiments, the toggle body is formed of a flexible material so that a height of the toggle body may be compressed in the second tighter position to provide comfort.

In one or more embodiments, the at least one lace comprises a pair of laces and the aperture is sized for a pair of laces. The toggle body is positioned between the first and second lace retention features.

In one or more embodiments, a lace adjustment device for footwear is provided. The device has a toggle body movable between two positions to provide lace adjustment. The toggle body rests on a first surface when the toggle body is in a first position. The toggle body rests on a second surface opposite the first surface when the toggle body is in a second position. A curved face extends in a height direction between the first surface and second surface. The toggle body has an eccentric aperture extends through the toggle body for receiving at least one lace. The aperture is positioned eccentrically relative to the first and second surfaces and is spaced apart by a length dimension from a radial center of the curved face. The toggle body rotates about the central axis of the aperture while riding on the curved face to move between the first and second position to provide bi-modal adjustment of the toggle body.

In one or more embodiments, the curved face has a complex contour defined by a first curvature adjacent the first surface and a second curvature adjacent the second surface. The first curvature has a first radius being greater than a second radius of the second curvature. The aperture is spaced apart in the length dimension from at least one of a first radial center of the first curvature or a second radial center of the second curvature.

In one or more embodiments, the curved face has a complex contour defined by a first curvature adjacent the first surface and a second curvature adjacent the second surface, wherein the central axis of the aperture is spaced apart in the length direction from the second radial center of the second curvature, where the aperture is positioned closer to the first surface.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** illustrates a perspective view of a shoe using a lace adjustment system according to one embodiment.

FIG. **2** is a side view of a lace adjustment device in a first position according to one embodiment.

FIG. **3** is a side view of the lace adjustment device in FIG. **2** shown in a second position.

FIG. **4** is a perspective view of the lace adjustment device in FIG. **2** shown in use in the first position with a pair of laces.

FIG. **5** is a perspective view of the lace adjustment device in FIG. **2** shown in use in the second position with a pair of laces.

FIG. **6** is a side view of a lace adjustment device according to another embodiment.

FIG. **7** illustrates a perspective view of a portion of a shoe with the lace adjustment device of FIG. **6** shown holding the laces in a looser position.

FIG. **8** is a perspective view of a portion of a shoe with the lace adjustment device of FIG. **6** shown holding the laces in a tighter position.

FIG. **9** is a side view of a lace adjustment device according to another embodiment.

FIG. **10** illustrates an exploded view of a portion of a lace adjustment system.

FIG. **11** is an end view of a lace adjustment device according to one embodiment.

FIG. **12** is a side view of a lace adjustment device according to another embodiment.

FIG. **13** is a side view of a lace adjustment device according to another embodiment.

FIG. **14** is a side view of a lace adjustment device according to another embodiment.

FIG. **15** is a side view of a lace adjustment device according to another embodiment.

FIG. **16** is a side view of the lace adjustment device in FIG. **15** shown in a compressed state.

FIG. **17** is a perspective view of the lace adjustment device in FIG. **15**

FIG. **18** illustrates a portion of a shoe with the lace adjustment device of FIG. **15** shown holding the laces in a tighter position.

FIG. **19** illustrates a portion of a shoe with the lace adjustment device of FIG. **15** shown holding the laces in a looser position.

FIG. **20** is a cross section view of a lace adjustment device according to another embodiment.

FIG. **21** is a cross section view of a lace adjustment device according to another embodiment.

DETAILED DESCRIPTION

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.

FIG. **1** shows an article of footwear **10** as a running shoe having an upper **12** coupled to a sole **14**. The upper **12** may be formed of one or more components that are stitched, bonded, or otherwise joined together to form a structure for receiving and securing a foot relative to sole structure **14**. The sole structure **14** may include a midsole, an outsole and an insole or cushioning layer.

The shoe **10** includes a lacing system **20** for tightening a shoe upper. The lacing system **20** includes a plurality of retention features **22** for retaining the laces **24**. As shown here, the retention features **22** may include a number of eyelets and loops arranged on opposing sides of a throat of the shoe upper, however, the lacing system **20** may have webbing, straps, hooks or any suitable retention features. The lace **24** is fed through the retention features **22** on the right and the left side of the throat to urge opposing sides of the throat towards each other and tighten the lace **24** to fasten the athletic shoe to the user's foot. The lacing system **20** allows the wearer of the shoe to tighten and loosen the shoe upper **12** by adjusting the laces **24** within the retention features **22**.

Traditional lacing systems or other tightening systems can be infinitely adjusted. However, traditional lacing systems do not provide the opportunity to quickly make small adjustments mid sport. For example, in running, feet can swell and change volume throughout a race, such as a marathon. Being able to quickly ease the laces without undoing them could change the running experience.

In other sports, players are constantly being subbed in and out of the game, such as in basketball, soccer, or volleyball, or other sports. Being able to quickly switch to relax the fit of the shoe during breaks and then go back into game mode is an advantage. Other sports may want different fits for different stages. For example, in cycling, the user may want to switch to a different fit for flat versus uphill, or spinning versus sprinting. Athletic shoes used for training may benefit from different tightness during a varied workout, like interval training, where explosive movements require stability and tightness, but low impact movements could provide for a looser, more comfortable fit. The lacing system **20** with the adjustment device **30** provides a simple component that lets the user easily switch the fit of the laces mid activity without having to re-lace their shoes.

In addition to providing small adjustments, the lacing system **20** may provide for larger adjustments with multiple adjustment devices **30**. The multiple adjustment devices **30** could be used to provide a large amount of loosening or tightening of the shoe for taking it on and off, for example. As shown in FIG. **1** for example, three adjustment devices **30** may be position along the throat of the shoe so that switching all three devices can be simultaneously moved to a loose position to allow a user to put the shoe on. Then simply flipping the devices **30** to a tight position allows the user to fully tighten the shoe.

As shown in FIG. **1**, the adjustment device **30** can be placed where the laces cross along the throat **26** of the shoe. The adjustment device **30** may also be positioned on the medial side **32**, lateral side **34** or tongue **36** or heel **38** of the upper **12**. The adjustment device **30** may also be placed anywhere along the laces **24** between two retention features **22**, such as eyelets.

The adjustment device **30** is shaped to be a bistable mechanism that provides quick and simple lace adjustment between only two preset positions. The adjustment device **30** is also able to be added to any traditional lacing system.

As shown in more detail in FIGS. **2-5**, the lace adjustment device **30** is formed of a toggle body **40** according to a first embodiment. The toggle body **40** is movable between two positions to provide bi-modal lace adjustment. The toggle body **40** has a first surface **42** and a second surface **44** opposite the first surface **42**. In FIG. **2**, the toggle body **40** is in a first position when resting on the first surface **42**. The toggle body **40** is in a second position when resting on the second surface **44**.

FIGS. **4-5** illustrate the toggle body **40** cooperating with a pair of laces **24**. In FIG. **4**, the toggle body **40** rests on the first surface **42** and is in the first position. In FIG. **5**, the toggle body **40** rests on the second surface **44** and is in the second position.

The toggle body **40** has a curved face **50** extending between the first surface **42** and second surface **44** in a height direction. The complex contour of the curved face **50** is defined by a first curvature **52** and a second curvature **54**. The first curvature **52** has a first radius R**1** being greater than a second radius R**2** of the second curvature **54**.

The toggle body **40** has an aperture **56** extending through the toggle body **40** for receiving at least one lace **24**. The aperture **56** is eccentric relative to the first and second surfaces **42**, **44** and is spaced apart in the length direction by a length L from the radial center of the second curvature **54** by a length dimension that is greater than zero. In the embodiment shown in FIGS. **2-5**, the aperture **56** is closer to the first surface **42** and the first curvature of the toggle body than the second surface **44**.

The toggle body **40** rotates about off-center axis C of the aperture **56** to move between the first position and second position. In the first position, the axis C of the aperture **56** is positioned at a first height H**1**. In the second position, the axis C of the aperture **56** is positioned at a second height H**2**. H**1** may be generally 1 mm to 5 mm, for example. H**2** may be generally 1.5 mm to 35 mm depending. H**1** and H**2** may vary based on the desired change in tightness. The greater height H**2** provides additional tightness in position two, while the lower height H**1** provides a first position that is looser.

The aperture **56** is closer to the first surface **42** of the toggle body **40** than the second surface **44**. The complex contour of the curved face **50** is defined by a first curvature **52** adjacent the first surface **42** and a second curvature **54** adjacent the second surface **44**. This geometry makes the toggle body **40** stable in both the first position and second position. In particular, in the tighter second position, the tighter second curvature **54** and the location of the aperture **56** ensure the toggle body **40** is maintained in the tighter second position even while the shoe is in use and experiencing forces and vibrations, such as while the wearer is running. The geometry also ensures that the toggle body **40** would not move from the looser first position to the second position without the user intentionally applying force to switch the toggle body **40**.

The toggle body **40** also has stability in the second position based on the location of the lace aperture **56** relative to the second curvature **54**. The center of the lace aperture **56** is always inboard from center of second radius R**2** the curved surface **50**. This provides ensures that the toggle body **40** remains in the second position because the aperture **56** is over-center relative to the radius R**2** of the second curvature **54**. Once the toggle body **40** is moved to the second tight position that is over-center, the toggle body **40** cannot be moved or unlocked unless a certain amount of force is used to pull the toggle body over the second curvature **54**. Therefore, the center C of the lace aperture **56** is overset inboard from the center of the radius R**2** by the distance L, which is always greater than zero.

The second surface **44** also has a second contact area **64** being greater than a first contact area **62**. The greater contact area **64** of the second surface **44** also helps ensure the toggle body **40** remains in the second position. The greater contact area **64** may also spread out the force being applied to the wearer on the high-pressure side of the toggle body **40**.

The toggle body **40** also has a tab **60** protruding opposite the curved face **50**. The tab **60** allows a wearer to easily grip the toggle body **40** and to move between the first position and the second position. As shown in FIGS. **2-5**, the tab **60** extends continuously from the second surface **44**. A distal end **66** of the tab **60** may be offset toward the first surface **42** from a contact area **64** in the second position. The offset distal end **66** allows the tab **60** to be easily gripped, even when the toggle body **40** is in the second position.

FIGS. **6-9** illustrate an adjustment device **30** having a toggle body **70** according to another embodiment. In FIGS. **7-8**, illustrated is the toggle body **70** installed on a pair of laces **24** and is positioned between the retention features **22** and positioned above the tongue **36**. The toggle body **70** cooperates with a reaction pad **76** positioned on the tongue **16**. In FIG. **7**, the toggle body **70** is in a first position when resting on the first surface **42**. In FIG. **8**, the toggle body **70** is in a second position when resting on the second surface **44**.

The toggle body **70** has an overall different shape and contour but has similar features and functions. The toggle body **70** has a curved face **50** extending between the first surface **42** and second surface **44**. The complex contour of the curved face **50** is defined by a first curvature **52** and a second curvature **54**. The first curvature **52** has a first radius R**1** being greater than a second radius R**2** of the second curvature **54**.

The aperture **56** is eccentric relative to the first and second surfaces **42**, **44**. The aperture is offset inboard in the length direction by the length dimension L from the center of the second curvature **54**. In FIGS. **6-9**, the aperture **56** is closer to the first surface **42** and the first curvature **52** of the toggle body **70** than the second surface **44**.

The toggle body **70** rotates about the central axis C of the aperture **56** to move between the first position and second position. In the second position, the central axis C of the aperture **56** is positioned at a second height H**2** to provide additional tightness.

The toggle body **70** also has a tab **60** protruding opposite the curved face **50**. The tab **60** allows a wearer to easily grip the toggle body **70** and to move between the first position and the second position. As shown in FIGS. **6-9**, the tab **60** extends generally straight in the same general plane as the second surface **44**. The tab **60** includes a textured grip portion **72** formed opposite the second surface. The grip portion **72** has ridges that helps the tab **60** to be easily gripped by a user. The grip portion **72** may have any pattern or shaped textured surface. The grip portion **72** may be such as on the second surface **44** or on the outer sides, for example. The grip portion **72** may be placed on any suitable surface of the toggle body.

The second surface **44** also has a second contact area **64** being greater than a first contact area **62**. As shown in FIGS. **6-9**, the contact area **64** is generally planar and extends from the curved face **50** and along the tab **60**.

FIGS. **9-11** illustrate additional features that help provide comfort to the wearer when the toggle is in the tighter second position. In FIG. **9**, a toggle body **80** is shown having two parts. The first part **82** forms the upper portion of the toggle body **80** and may be formed of a harder material than the second part **84**. The second part **84** may be formed of a softer material to provide some cushioning or allow the second surface **44** to conform to the shoe or the user's foot or distribute and soften potential pressure points. The toggle body **80** may be molded together as a dual injection part with two materials, or the parts may be molded separately and joined together. The first part **82** may be molded of a stiff

structural material while the second part **84** may be formed of a softer material. For example, the first part **82** may be formed of stiff materials such as nylon, TPU, fiberglass re-enforced polyamide, ABS, Carbon fiber-reinforced polymers, Acrylic, Polypropylene, Polyoxymethylene (POM), Polycarbonate, or other suitable stiff materials. The second part **84** may be formed of soft materials such as softer compound TPU, foam, rubber silicone, or other suitable materials that are softer and provide more cushion than the first part **82**.

FIG. **10** shows an exploded view of the reaction pad **76** that provides cushioning when the toggle body is in the second, tighter position. The reaction pad **76** may have an outer appearance layer **86**, reaction layer **88** and a cushion layer **90**. The reaction pad **76** may be circular, rectangular, or any suitable shape. The reaction layer **88** may be stiff sheet that resists deformation the adjustment device **30** applies force, especially in the second tighter position. The reaction layer may be a chem sheet, or formed of other materials such as nylon, TPU, non-woven fiber board, cellulose board or other suitable sheet or board material with sufficient stiffness. The appearance layer **86** may be formed of suede, or synthetic suede, or any suitable material. The cushion layer **90** may be formed of foam, such as 5 millimeter foam, or sockliner foam, or any suitable foam or cushion material. The layers of the reaction pad may be stitched to the upper **12** along the medial side **32**, the lateral side **34** or the tongue **36**, as shown in FIG. **1**, or positioned at any suitable location on the shoe.

FIG. **11** shows an end view of a toggle body **100** according to another embodiment shown in the tighter second position. The second surface **44** may have a curvature to match a curvature of the upper **12** or the wearer's foot.

FIG. **12** is a toggle body **110** according to another embodiment shown in the looser first position. The toggle body **110** has an overall different shape and contour, but has similar features and functions as discussed above. The toggle body **110** has a curved face **50** extending between the first surface **42** and second surface **44**. The complex contour of the curved face **50** is defined by a first curvature **52** and a second curvature **54**. The first curvature **52** has a first radius R**1** being greater than a second radius R**2** of the second curvature **54**.

The toggle body **110** has an aperture **56** is positioned at a first height H**1**. In the second position, the central axis C of the aperture **56** is positioned at a second height H**2**. The greater height H**2** provides additional tightness in position two, while the lower height H**1** provides a first position that is looser.

The toggle body **110** also has a tab **60** protruding opposite the curved face **50**. The tab **60** has a step contour **112** so that the distal end **66** of the tab **60** is offset toward the first surface **42**. The offset distal end **66** allows the tab **60** to be easily gripped, even when the toggle body **110** is in the second position.

FIG. **13** is a toggle body **120** according to another embodiment shown in the looser first position. The toggle body **120** has an overall different shape and contour, but has similar features and functions as discussed above. The toggle body **120** has a curved face **50** extending between the first surface **42** and second surface **44**. The complex contour of the curved face **50** is defined by a first curvature **52** and a second curvature **54**. The first curvature **52** has a first radius R**1** being less than a second radius R**2** of the second curvature **54**. The aperture **56** is positioned generally at the center of the radius of curvature of R**1**.

The toggle body **120** has an aperture **56** positioned at a first height H**1**. In the second position, the central axis C of the aperture **56** may be positioned at a second height H**2** to provide increased tightness.

The toggle body **120** also has a tab **60** protruding opposite the curved face **50**. The tab **60** has an angled segment **122** so that the distal end **66** of the tab **60** offset between the first surface **42** and the second surface **44**. A grip notch **124** is also defined along the tab **60**.

FIG. **14** is a toggle body **130** according to another embodiment, shown in the looser first position. The toggle body **130** has an overall different shape and contour, but has similar features and functions as discussed above. The toggle body **130** has a curved face **50** extending between the first surface **42** and second surface **44**. In the embodiment of FIG. **14**, the contour of the curved face **50** is defined by a single curvature R**2**. The aperture **56** is offset by a length dimension L from R**2**.

The toggle body **130** has an aperture **56** positioned at a first height H**1**. In the second position, the central axis C of the aperture **56** may be positioned at a second height H**2**.

The toggle body **130** also has a tab **60** protruding opposite the curved face **50**. The tab **60** extends linearly from a position between the first and second surface **42**, **44**.

FIGS. **15-19** illustrate an adjustment device **30** having a toggle body **140** according to another embodiment. In FIGS. **18-19**, the toggle body **140** is installed on one lace **24** and is positioned between retention features **22** and is positioned along the lateral side **34** of the upper. The toggle body **140** cooperates with a reaction pad **76** fixed to the lateral side **34**. In FIG. **19**, the toggle body **140** is in a first position resting on the first surface **42**. In FIG. **18**, the toggle body **140** is in a second position resting on the second surface **44**.

The toggle body **140** also has a second surface **44** having an increased contact area **64** along the second surface **44**. As shown in FIG. **17**, the toggle body **140** has a flange **148** extending with an increased thickness T. The flange **148** has an increased thickness T relative to the main body **150**. The aperture **56**. Extends through the main body **150** for receiving the lace **24**. The aperture **56** is eccentric relative to the first and second surfaces **42**, **44**. The flange **148** provides the increased contact area **64** when the toggle body **140** is in the second position, but does not significantly increase the size and weight of the toggle body **140**.

The toggle body **140** has a curved face **50** extending between the first surface **42** and second surface **44**. The complex contour of the curved face **50** is defined by a first curvature **52** and a second curvature **54**. The first curvature **52** has a first radius R**1** being less than a second radius R**2** of the second curvature **54**. As shown, the first curvature **52** is adjacent the first surface **42**. The aperture **56** is spaced apart in the length direction by the length L from the center of the first curvature **52** at least by the tighter radius R**1**.

The toggle body **140** rotates about the central axis C of the aperture **56** to move between the first position and second position. In the second position, the central axis C of the aperture **56** is positioned at a second height H**2** to provide additional tightness.

As shown in FIGS. **15-19**, the toggle body **140** has a web **146** of openings. The web **146** may include a plurality of openings that extend through the toggle body **140**. The web **146** may also have other elements such as reduced thickness that allows for controlled compliance built into lacing pressure. The toggle body **140** may be formed of an elastomer that allows the web **146** to compress and have a spring-effect. The web **146** provides a low level of controlled sprung fit and stretch to the lacing system **20**. As shown in

FIG. **16**, the web **146** may be compressed when the toggle body **140** experiences additional load when the toggle body **140** is in the second position. For example, the wearer may flex, rotate or tilt their foot during dynamic movements the web **146** could flex to provide more comfort and alleviate any pressure points caused by the toggle body **140**.

The toggle body **140** also has a tab **60** protruding opposite the curved face **50**. The tab **60** may also have the increased thickness T to provide additional grip for the used. The tab **60** has an angled segment **122** so that the distal end **66** of the tab **60** offset between the first surface **42** and the second surface **44**. A grip notch **124** is also defined along the tab **60**.

FIGS. **20-21** show end-views of a lace adjustment devices **30** according to other embodiments. The adjustment device **30** may have various heights H**2** measured from the second surface **44** to the center C of the lace aperture **56**. The adjustment device **30** may also have various thicknesses T. Adjustment devices with heights H**2** and the thicknesses T may be provided for different applications, different footwear dimensions or different amounts of tightness adjustment. For example, as shown in FIG. **20**, a toggle body **160** may have a height H**2** that is greater than the thickness T. FIG. **21** illustrates another example of a toggle body **170** where the height H**2** is less than the thickness T. The toggle body **170** in FIG. **21** may provide similar tightness adjustment as the toggle body **160** in FIG. **20**. However, the increased thickness T of toggle body **170** provides greater pressure distribution across the larger contact area **64**. In contrast, toggle body **160** may be able to be positioned along small areas of the shoe that could not accommodate a larger adjustment device.

While exemplary embodiments are described above, it is not intended that these embodiments describe all possible forms of the invention. Rather, the words used in the specification are words of description rather than limitation, and it is understood that various changes may be made without departing from the spirit and scope of the invention. Additionally, the features of various implementing embodiments may be combined to form further embodiments of the invention.

What is claimed is:

1. A lace adjustment device for footwear, the device comprising:

a toggle body movable between two positions to provide bi-modal lace adjustment, the toggle body comprising:

a first surface, wherein the toggle body is in a first position when resting on the first surface;

a second surface opposing the first surface, wherein the toggle body is in a second position when resting on the second surface;

a curved face extending between the first surface and second surface in a height direction, and having a complex contour defined by a first curvature adjacent the first surface, and a second curvature adjacent the second surface; and

an aperture extending through the toggle body for receiving at least one lace, wherein a central axis of the aperture is eccentric relative to the first and second surfaces and is spaced apart in the length direction from the curved face,

wherein the toggle body rotates about the central axis of the aperture to move between the first and second position.

2. The lace adjustment device of claim **1**, wherein the aperture is closer to the first surface of the toggle body than the second surface.

3. The lace adjustment device of claim **1**, wherein the toggle body further comprises a tab protruding opposite the curved face, the tab configured for gripping the toggle body and to move between the first position and the second position.

4. The lace adjustment device of claim **3**, wherein the tab extends adjacent the second surface.

5. The lace adjustment device of claim **1**, wherein the second surface has a second contact area being greater than a first contact area.

6. The lace adjustment device of claim **1**, wherein the toggle body is formed of a first part formed of a first material and a second part formed of a second material being softer than the first material.

7. An article of footwear comprising:

a shoe upper having a first lace retention feature and a second lace retention feature,

at least one lace extending between the first and second lace retention features;

a toggle body to provide bi-modal lace adjustment, the toggle body comprising:

a lace aperture extending through the toggle body for receiving the at least one lace, wherein a central axis of the aperture is positioned eccentrically;

a first surface, wherein the toggle body is in a first loose position when resting on the first surface, wherein the lace aperture is adjacent the first surface; and

a second surface opposite the first surface, wherein the toggle body is in a second tighter position when resting on the second surface,

wherein the toggle body rotates about the central axis to move between the first and second position wherein in the second position, the at least one lace has a greater amount of tightness than when the toggle body is in the first position.

8. The article of footwear of claim **7**, wherein the toggle body has a curved face extending between the first surface and second surface in a height direction.

9. The article of footwear of claim **8**, wherein the lace aperture is offset by a length dimension from a radial center of the curved face.

10. The article of footwear of claim **8**, wherein curved face has a complex curvature defined by a first curvature positioned adjacent the first surface, and a second curvature positioned adjacent the second surface.

11. The article of footwear of claim **10**, wherein the lace aperture is offset by a length dimension from a radial center of the second curvature.

12. The article of footwear of claim **7**, further comprising a reaction pad disposed on the shoe upper, the reaction pad having a surface for supporting the first and second surface of the of the toggle body.

13. The article of footwear of claim **12**, wherein the reaction pad is positioned along at least one of a tongue, medial surface, lateral surface or heel of the shoe upper.

14. The article of footwear of claim **12**, wherein the reaction pad comprises a cushion layer to provide comfort.

15. The article of footwear of claim **12**, further comprising a plurality of toggle bodies positioned at a plurality of locations along the at least one lace.

16. The article of footwear of claim **12**, wherein the toggle body is formed of a flexible material so that a height of the toggle body may be compressed in the second tighter position to provide comfort.

17. The article of footwear of claim **7**, wherein the at least one lace comprises a pair of laces, wherein the aperture is

sized for a pair of laces, wherein the toggle body is positioned between the first and second lace retention features.

18. A lace adjustment device for footwear, the device comprising:

a toggle body movable between two positions to provide lace adjustment, the toggle body comprising:

a first surface, wherein the toggle body is in a first position when resting on the first surface;

a second surface opposite the first surface, wherein the toggle body is in a second position when resting on the second surface;

an aperture extending through the toggle body for receiving at least one lace, wherein a central axis of the aperture is eccentric relative to the first and second surfaces; and

a curved face extending between the first surface and second surface in a height direction, wherein the aperture is spaced apart in a length dimension from a radial center of the curved face,

wherein the toggle body rotates about the central axis of the aperture while riding on the curved face to move between the first and second position to provide bimodal adjustment of the toggle body.

19. The lace adjustment device of claim **18**, wherein the curved face has a complex contour defined by a first curvature adjacent the first surface and a second curvature adjacent the second surface, wherein the first curvature has a first radius being greater than a second radius of the second curvature, wherein the aperture is spaced apart in the length dimension from at least one of a first radial center of the first curvature or a second radial center of the second curvature.

20. The lace adjustment device of claim **19**, wherein the curved face has a complex contour defined by a first curvature adjacent the first surface and a second curvature adjacent the second surface, wherein the central axis of the aperture is spaced apart in the length direction from the second radial center of the second curvature; and

wherein the aperture is positioned closer to the first surface.

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