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(54) **FOOT ALIGNMENT ADJUSTER FOR  
POINTE SHOE**

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(57) **ABSTRACT**

A foot alignment adjuster for placement in a pointe shoe includes an adjustment pad having a top surface and a bottom surface and configured to fit in a dance shoe under a dancer's forefoot. The adjustment pad has a front edge shaped to be placed at a front of the dance shoe, a back edge, a first side, and a second side. The front edge defines a first front corner with the first side and a second front corner with the second side and the back edge defines a first back corner with the first side and a second back corner with the second side. A thickness of the adjustment pad may increase from the first side to the second side; and a thickness of the adjustment pad may change from the back edge to the front edge.



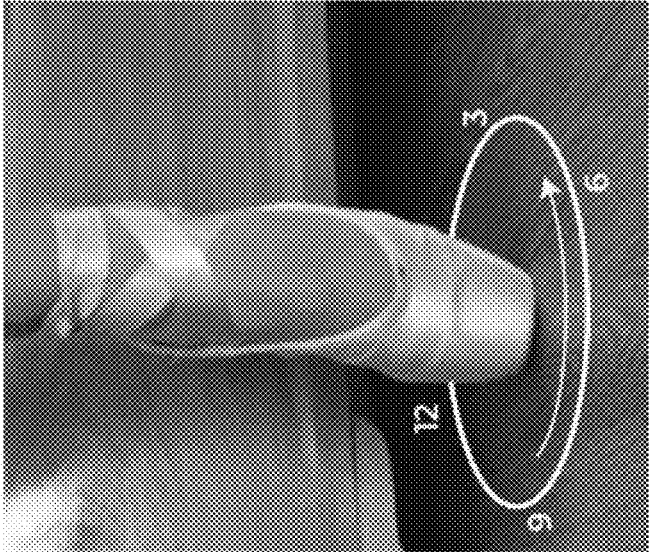


FIG. 2B

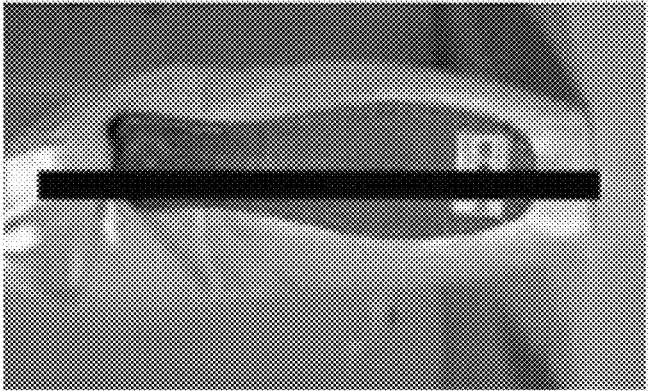


FIG. 2A

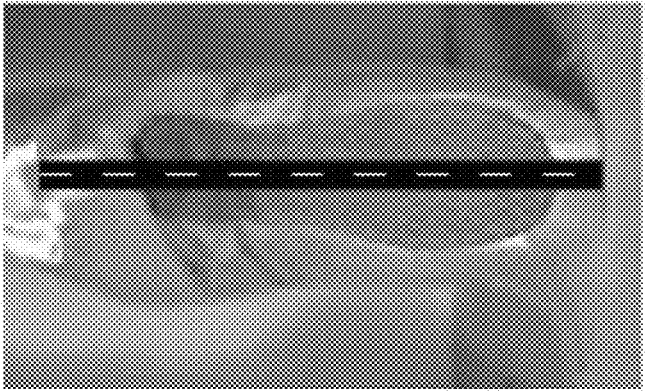


FIG. 1

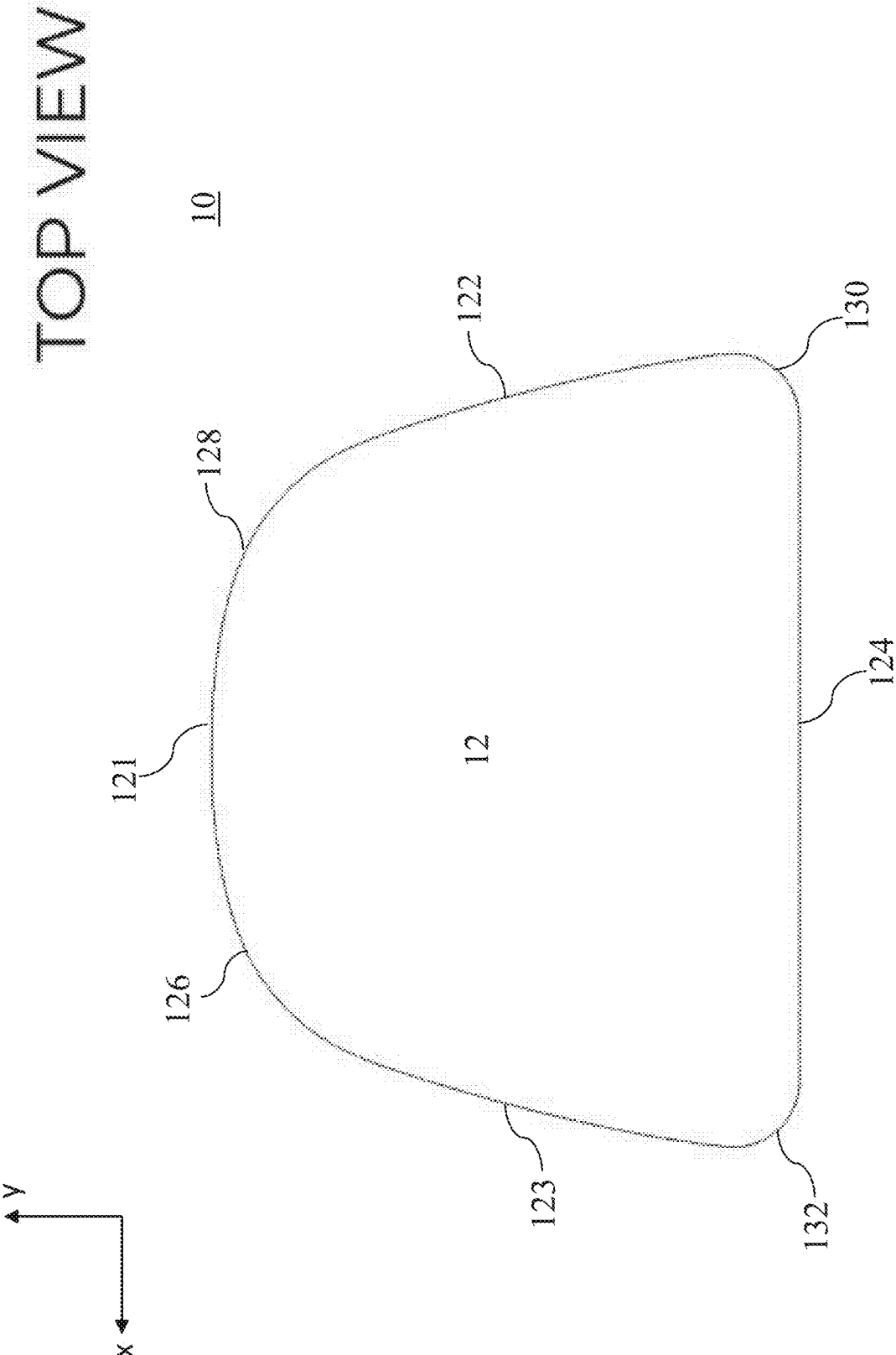
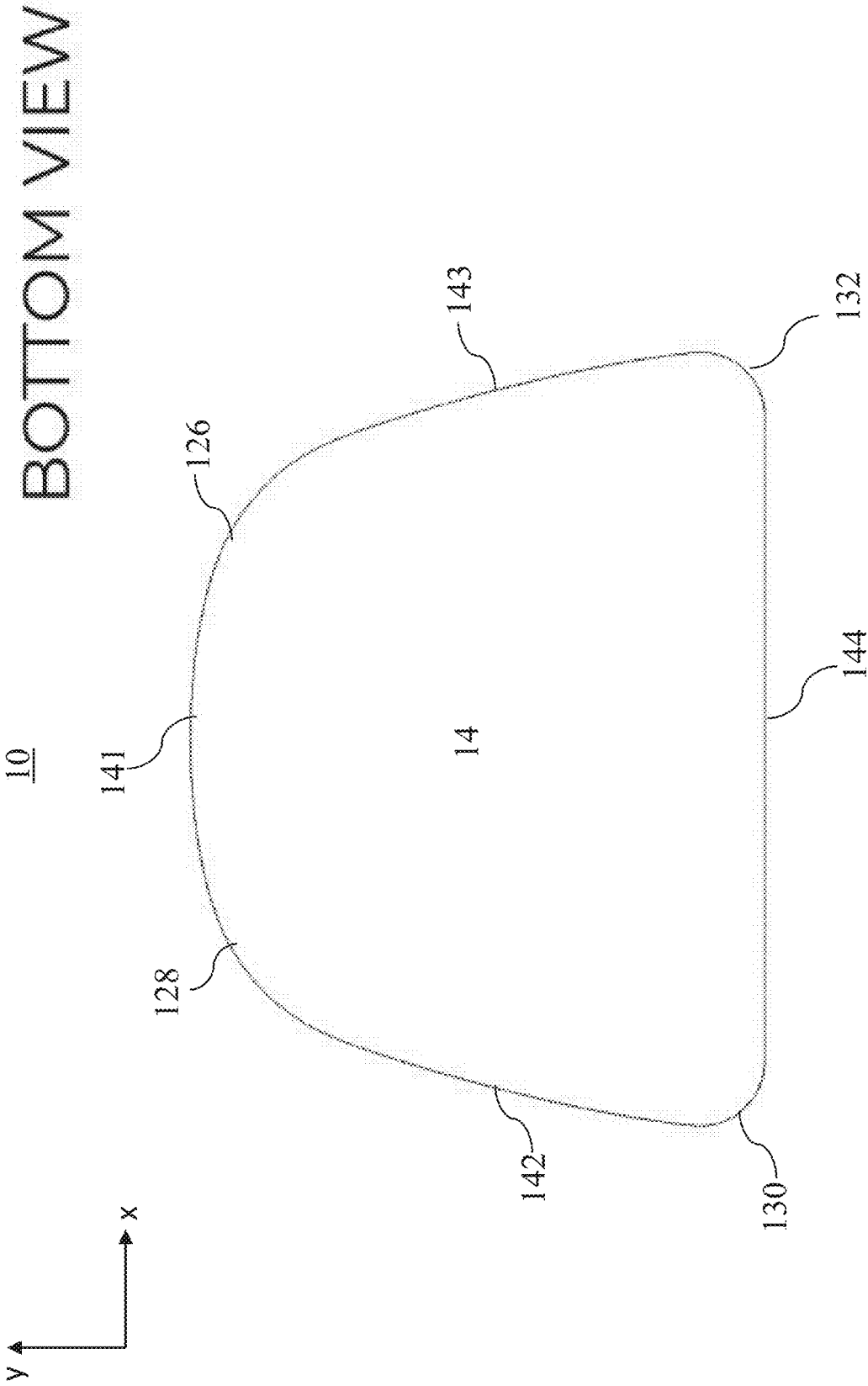


FIG. 3



BOTTOM VIEW

FIG. 4

LEFT FRONT PERSPECTIVE VIEW

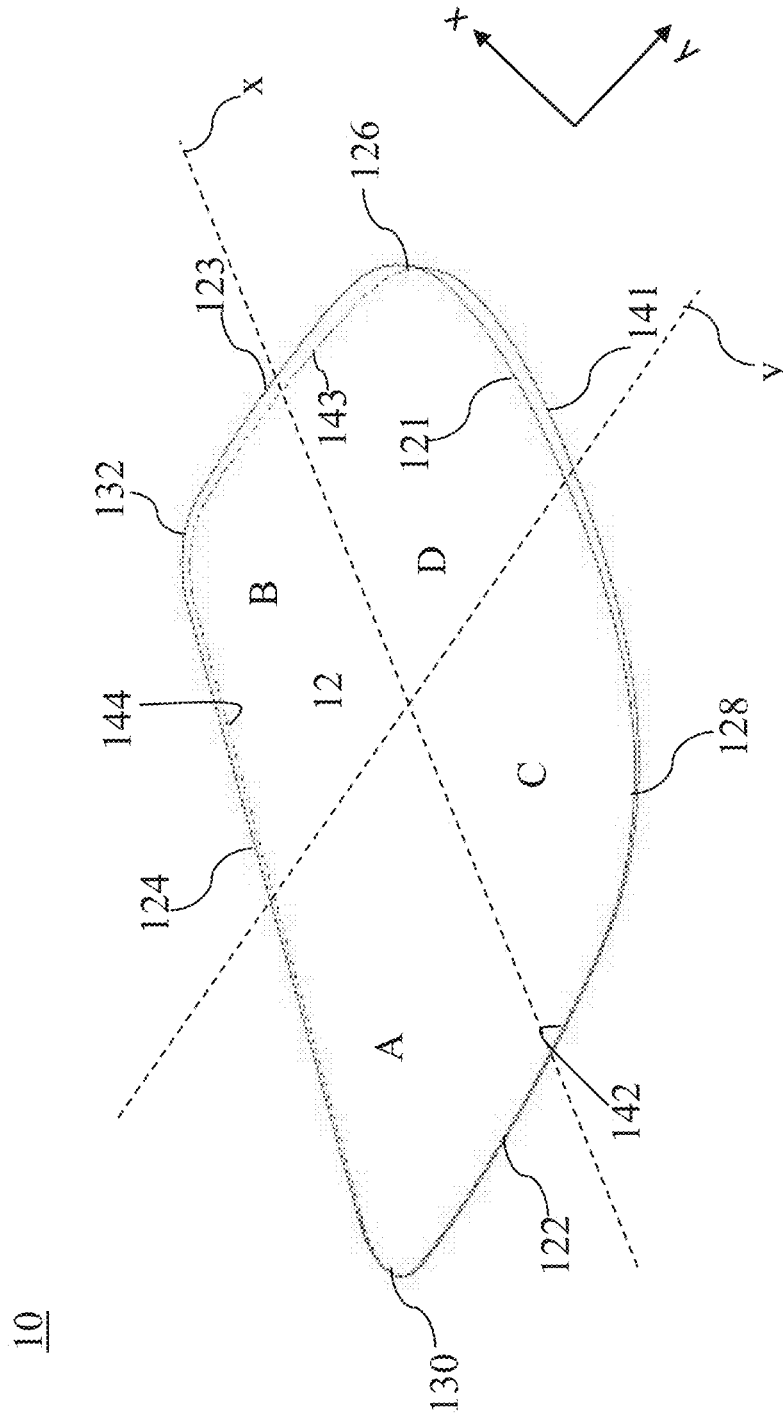


FIG. 5

RIGHT FRONT PERSPECTIVE VIEW

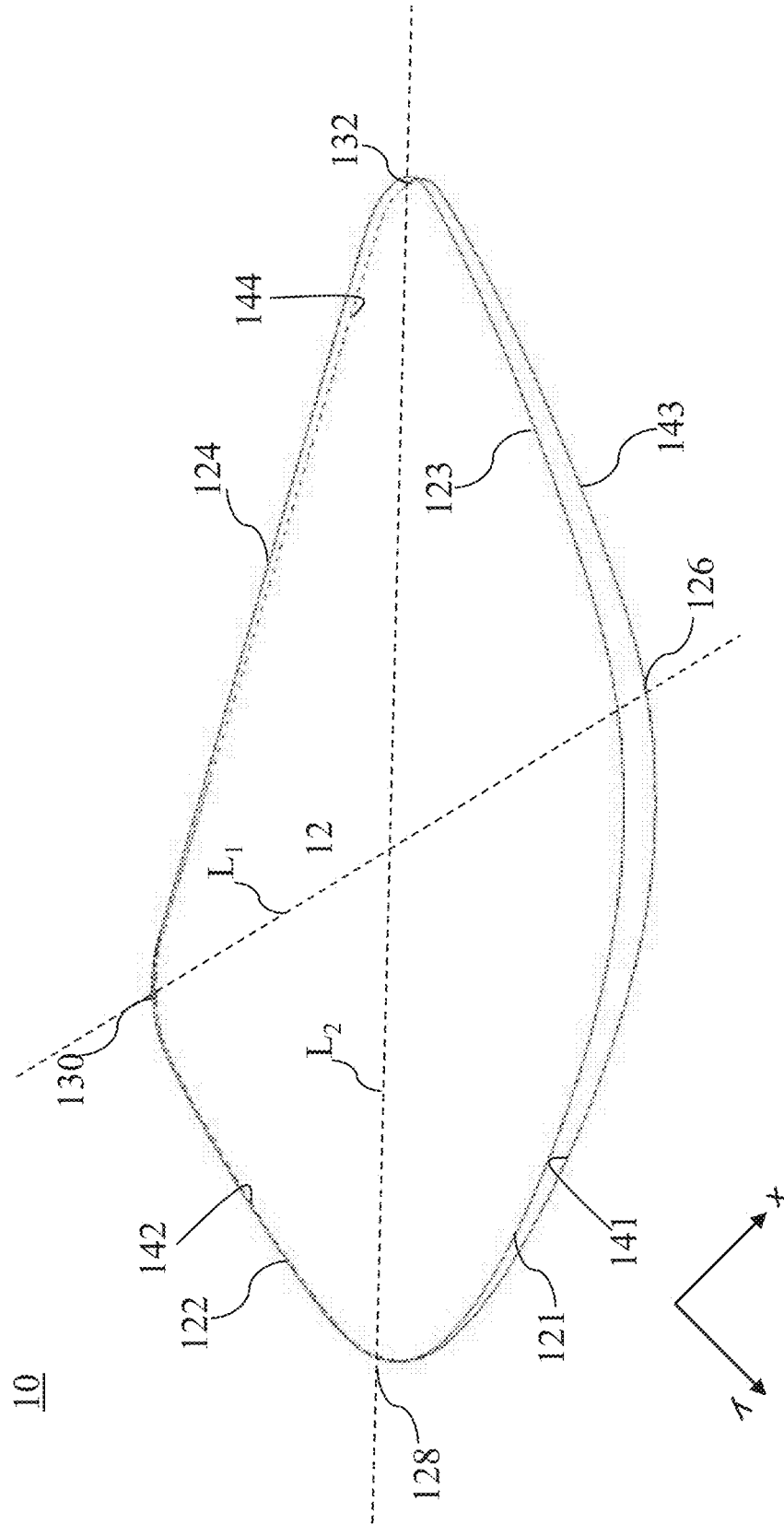


FIG. 6

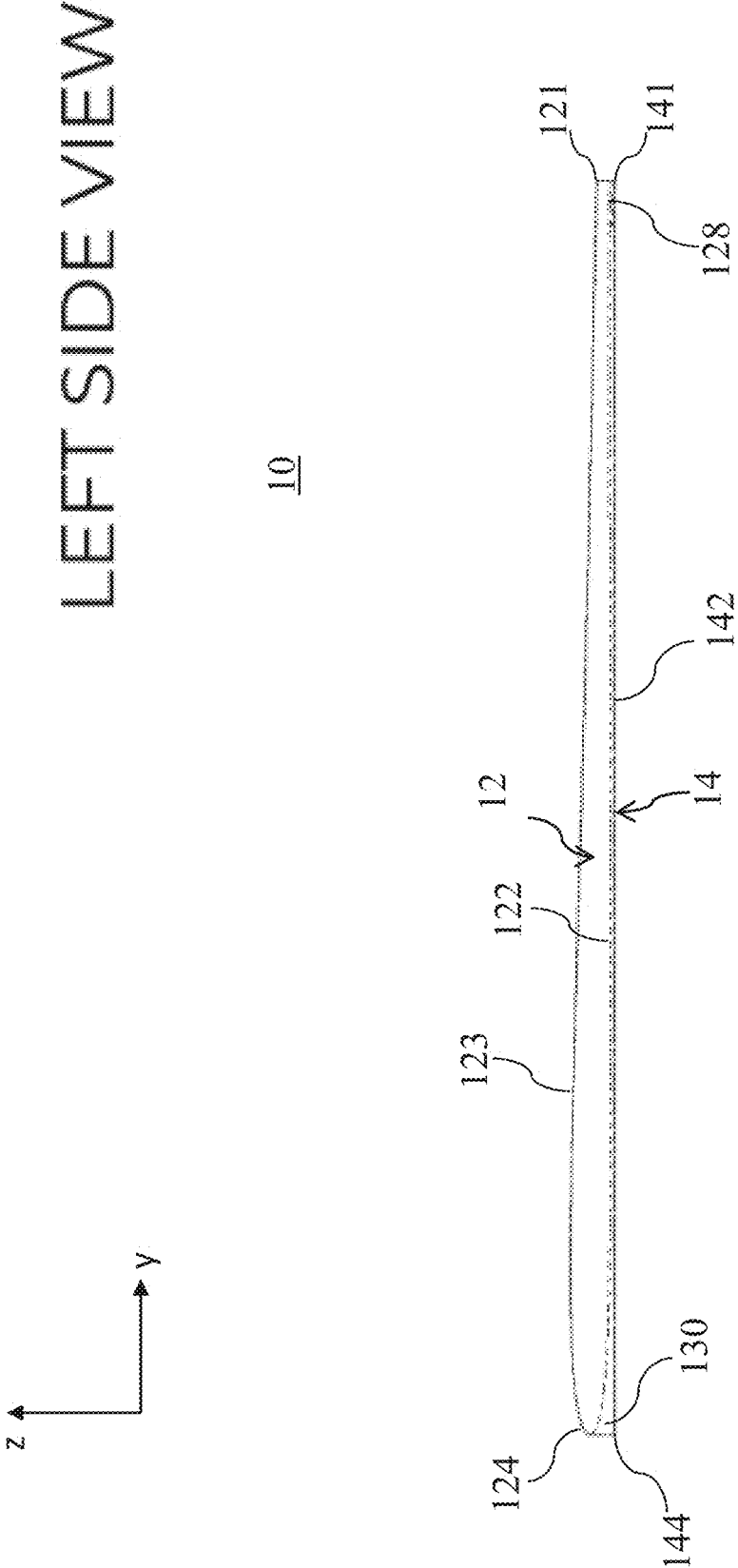


FIG. 7

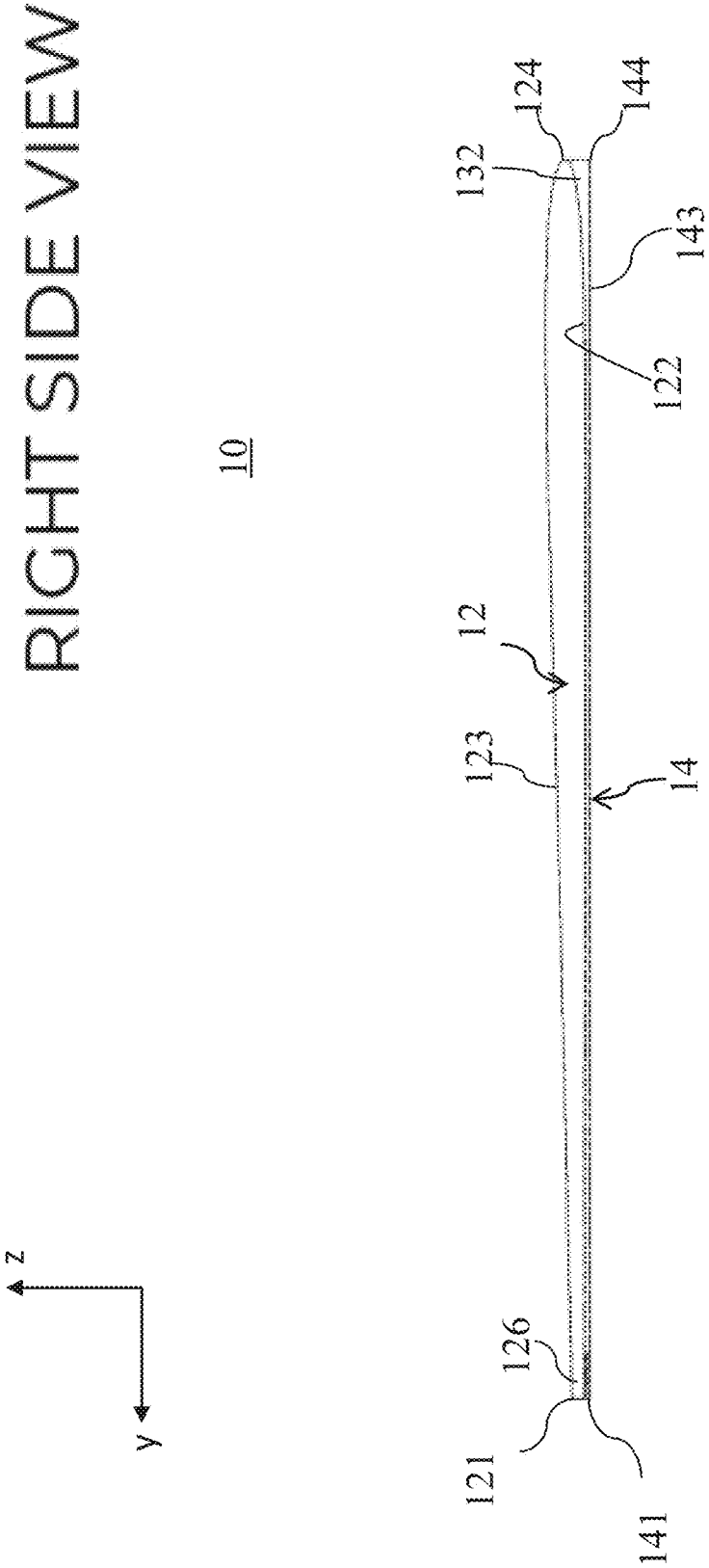


FIG. 8



BACK VIEW

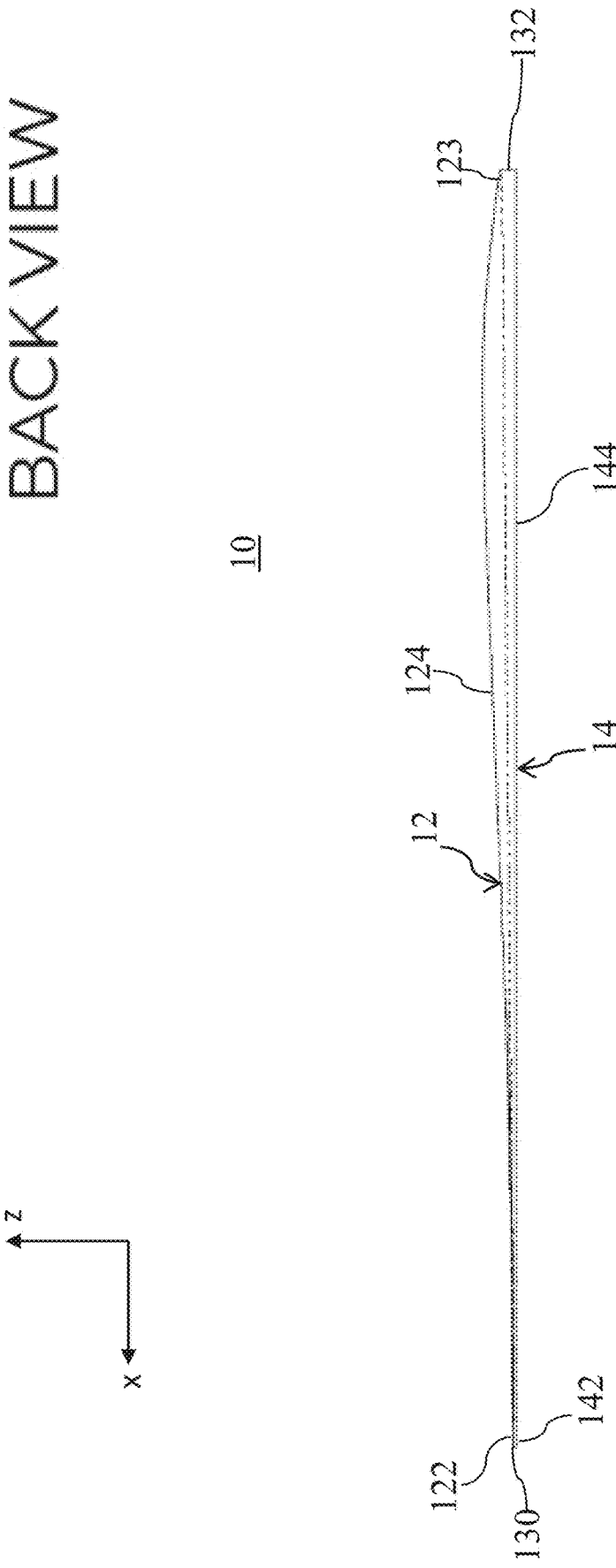


FIG. 9

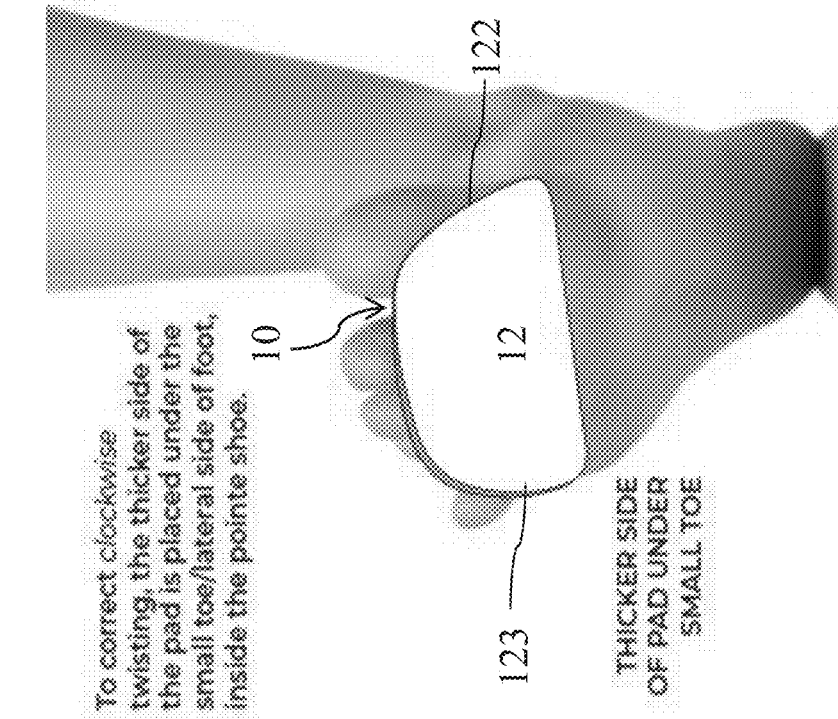


FIG. 10

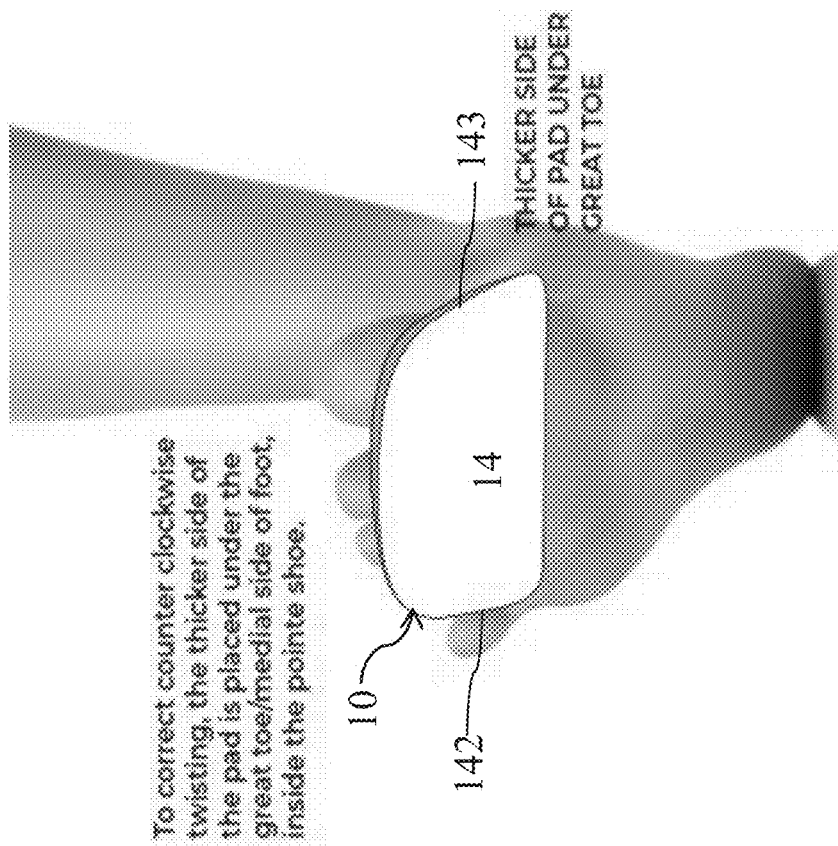


FIG. 11

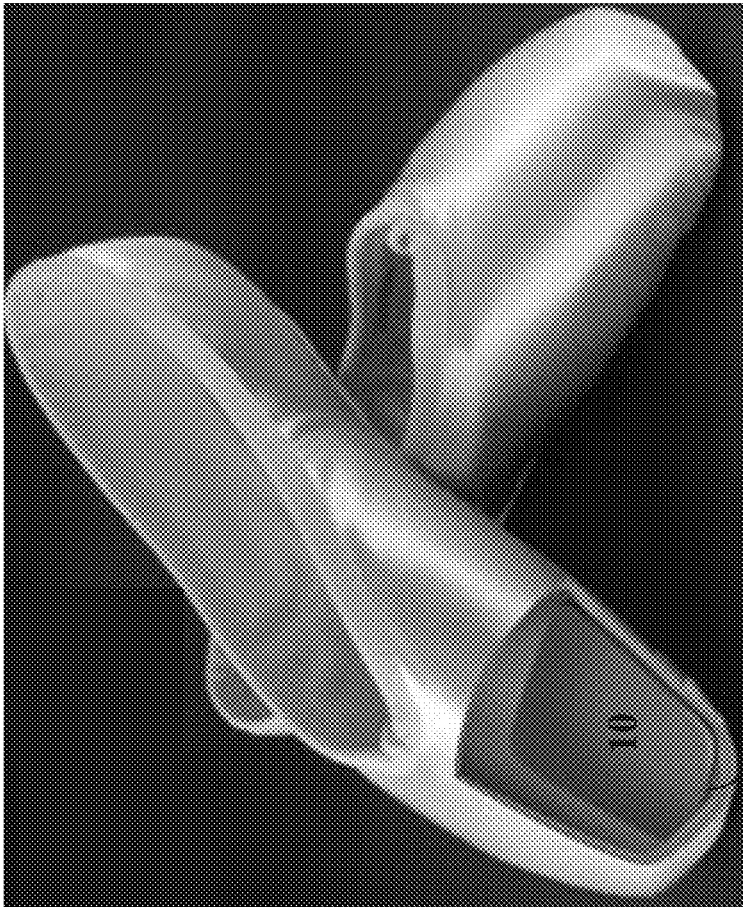


FIG. 12

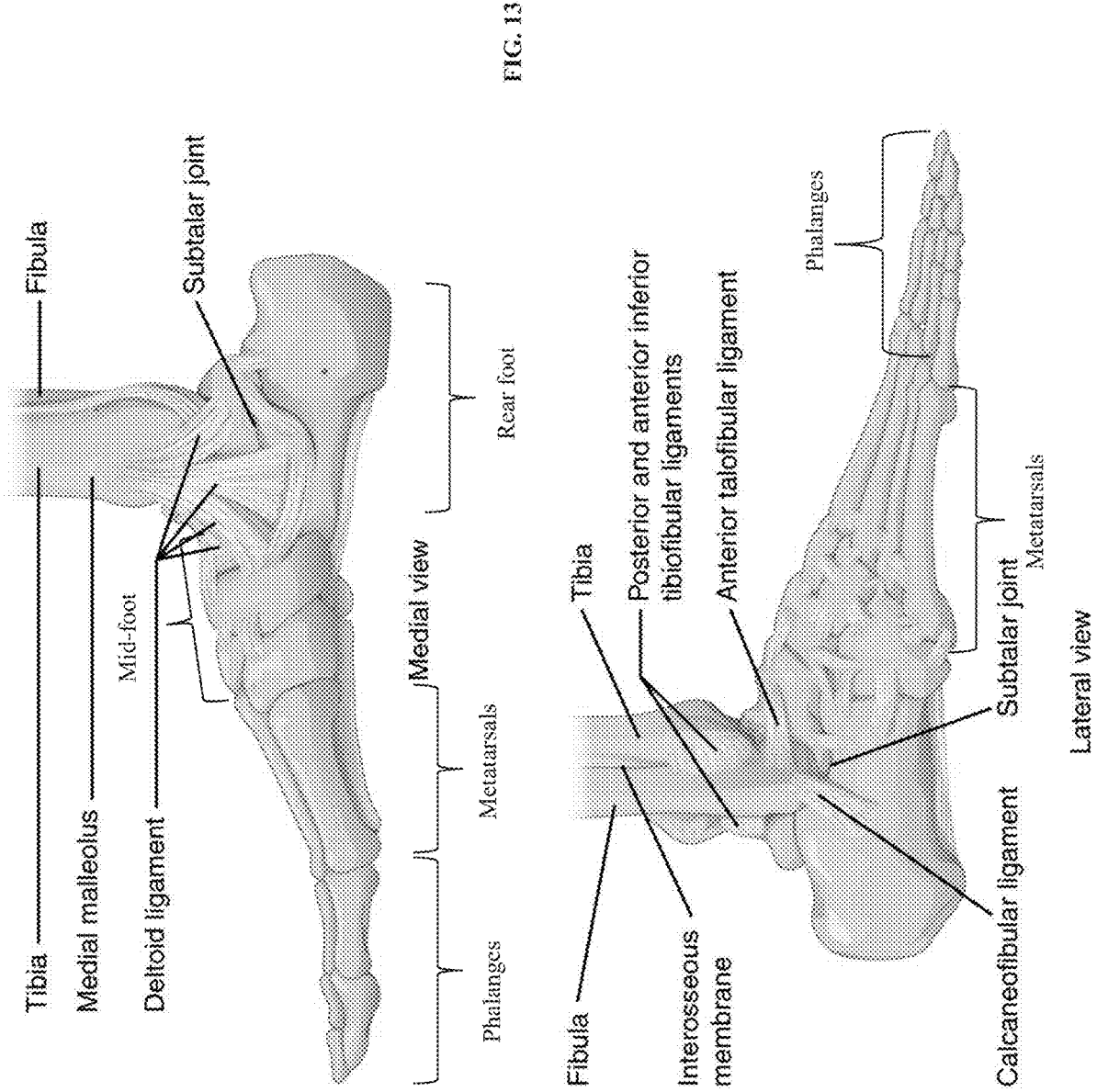


FIG. 13

[https://commons.wiki-media.org/wiki/File:919\\_Ankle\\_Feet\\_Joints.jpg](https://commons.wiki-media.org/wiki/File:919_Ankle_Feet_Joints.jpg)

## FOOT ALIGNMENT ADJUSTER FOR POINTE SHOE

### BACKGROUND

**[0001]** Ballet dancers use specifically designed pointe shoes to assist the dancer to stand on the tips of their toes, referred to as dancing “en pointe.” The pointe shoe typically provides support to the dancer’s foot through a toe box, which is a rigid structure encasing the front of the dancer’s toes and some or all of the rest of the forefoot, and a shank, which extends longitudinally from the toe box. The toe box generally hugs the foot across and around the metatarsals so that all sides of the dancer’s foot are held in place. The shank is an elongate, rigid element that is structurally coupled (e.g., as a separately attached or as an integrated piece) to the toe box and extends rearwardly from the bottom of the toe box, typically at least across the midfoot region to the rearfoot region of the shoe, in the bottom, foot-supporting portion of the shoe. When dancing en pointe, the shank and toe box help support the foot and help distribute the dancer’s weight across a broader area foot instead of the weight being concentrated in the toes. To effectively spread the weight, the shoe should fit tightly to the dancer’s foot.

**[0002]** Extensive training and practice are required to develop the strength and technique needed for pointe work. Proper pointe technique requires not only proper foot placement such that the toes are perpendicular to the floor to maximize the contact surface area of the platform (i.e., the flattened tip of the toe box) with the floor. It also requires proper body alignment to form a straight “line” extending from the center of the hip through the toes. If proper pointe technique is not used, injuries may occur.

**[0003]** A common problem with traditional pointe shoes is the lack of a mechanism to assist the dancer to perform pointe work with proper foot placement and body alignment. When transitioning to en pointe, a dancer receives no feedback whether the foot reaches a fully extended, vertical orientation. Both under- and over-plantar flexion of the foot are undesirable for en pointe since they not only undermine the aesthetic aspect of the dance, but also can create significant possibilities of strains and injury to the dancer’s foot.

**[0004]** FIG. 1 shows a correct or neutral alignment of a dancer’s right foot in a ballet shoe “en pointe”, as viewed from behind. The dark vertical line represents the proper alignment of the dancer’s heel and toe box of the shoe.

**[0005]** FIGS. 2A-B show examples of mis-alignment of a dancer’s foot in a ballet shoe “en pointe”. In FIG. 2A, the dancer’s right heel and toe box are out of alignment, caused by a clockwise twist in the dancer’s foot. The heel is to the right of the vertical bar. In FIG. 2B, the dancer’s left foot is shown with a counter-clockwise twist, sometimes referred to as “sickling”. Both the clockwise twist and counter-clockwise twist are undesirable both aesthetically and for the safety of the dancer.

**[0006]** Thus, when the ballet shoe does not fit properly, and/or when the dancer’s musculo-skeletal condition causes the foot to shift or twist away from a correct alignment, the illustrated problems in alignment can occur. Accordingly, there is a need for a device for use in a pointe shoe that assists the dancer in performing pointe work, while inhibiting the dancer’s foot from twisting or “sickling.”

### SUMMARY

**[0007]** The inventive subject matter is generally directed to a foot alignment adjuster for a dance shoe. It is particularly directed to a foot alignment adjuster that is configured to fit within the toe box of a pointe shoe having a rigid toe box, and cause a desired alignment of the leg with the foot when the user is standing en pointe. The inventive subject matter provides advances over the prior art.

**[0008]** In certain embodiments it is directed to a foot alignment adjuster for a dance shoe having an adjustment pad having a top surface and a bottom surface and configured to fit in a dance shoe under a dancer’s forefoot. The adjustment pad can have a front edge shaped to be placed at a front of the dance shoe, a back edge, a first side, and a second side; where the front edge defines a first front corner with the first side and a second front corner with the second side; and where the back edge defines a first back corner with the first side and a second back corner with the second side. A thickness of the adjustment pad can increase from the first side to the second side.

**[0009]** The first side can be a left side and the second side can be a right side. Alternatively, the first side can be a right side and the second side can be a left side.

**[0010]** The bottom surface can be affixable to the dance shoe. The adjustment pad can be removable from the dance shoe.

**[0011]** The foot alignment adjuster can include a covering affixed to at least one of the top surface or the bottom surface, where the covering comprises a different material than the adjustment pad.

**[0012]** The adjustment pad can define a plurality of regions, each respective region having a thickness different from the other respective regions.

**[0013]** Placement of the adjustment pad under one of the dancer’s forefeet in the dance shoe can reduce a twist in the dancer’s foot when en pointe. For example, placing the first side under a medial side of the dancer’s forefoot can reduce a clockwise twist, while placing the second side under the medial side of the dancer’s forefoot can reduce a counter-clockwise twist. Still further, placing the first side under a lateral side of the dancer’s forefoot can reduce a clockwise twist, while placing the second side under the lateral side of the dancer’s forefoot can reduce a counter-clockwise twist.

**[0014]** Still further, placing the first side under a lateral side of one of the dancer’s forefeet can reduce a clockwise twist in the one foot, while placing the first side under a medial side of the other of the dancer’s forefeet can reduce a counter-clockwise twist in the other foot.

**[0015]** The adjustment pad can be configured for placement in either a left dance shoe or a right dance shoe in any of the following configurations: the first side aligned with a medial side of the right dance shoe and the second side aligned with a lateral side of the right dance shoe; the first side aligned with a lateral side of the right dance shoe and the second side aligned with a medial side of the right dance shoe; the first side aligned with a medial side of the left dance shoe and the second side aligned with a lateral side of the left dance shoe; and the first side aligned with a lateral side of the left dance shoe and the second side aligned with a medial side of the left dance shoe.

**[0016]** The thickness of the adjustment pad can decrease from the back edge to the front edge such that the thickness of the first front corner is less than the thickness of the first back corner.

**[0017]** The thickness of the adjustment pad can increase from the back edge to the front edge such that the thickness of the second back corner is less than the thickness of the second front corner.

**[0018]** The thickness of the first front corner can be less than the thickness of the second front corner.

**[0019]** The thickness of the first back corner can be less than the thickness of the second back corner.

**[0020]** The thickness of the first back corner can be less than the thickness of the second front corner.

**[0021]** The thickness of the second front corner can be less than the thickness of the second back corner.

**[0022]** The front edge can be curved.

**[0023]** The adjustment pad can be coupled to one of a modular insole or a full-length insole.

**[0024]** A thickness of the adjustment pad can change from the back edge to the front edge

**[0025]** In another possible embodiment, the inventive subject matter is directed to a method of making a foot alignment adjuster that includes forming an adjustment pad comprising a top surface and a bottom surface and configured to fit in a dance shoe under a dancer's forefoot; wherein the adjustment pad has a front edge shaped to be placed at a front of the dance shoe, a back edge, a first side, and a second side; wherein the front edge defines a first front corner with the first side and a second front corner with the second side; wherein the back edge defines a first back corner with the first side and a second back corner with the second side; and wherein a thickness of the adjustment pad increases from the first side to the second side.

**[0026]** Forming the adjustment pad can include one of molding the adjustment pad; 3-D printing the adjustment pad; or carving the adjustment pad.

**[0027]** In another possible embodiment, the inventive subject matter is directed to a foot alignment adjuster that includes an adjustment pad having a top surface and a bottom surface and configured to fit in a dance shoe under a dancer's forefoot; where the adjustment pad has a front edge shaped to be placed at a front of the dance shoe, a back edge, a first side and a second side; and where a density of the adjustment pad decreases from the first side to the second side.

**[0028]** The density of the adjustment pad can increase from the back edge to the front edge.

**[0029]** Other embodiments are contemplated in the Detailed Description below, the appended Figures, and in the claims, as originally written or amended, the claims as such being incorporated by reference into this Summary. The foregoing is not intended to be an exhaustive list of embodiments and features of the inventive subject matter. Persons skilled in the art can appreciate other embodiments and features from the following detailed description, in conjunction with the drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0030]** The following figures show embodiments according to the inventive subject matter, unless noted as showing prior art. The figures presented are for illustrative and explanatory purposes and are not necessary in scale.

**[0031]** FIG. 1 shows a correct alignment of a dancer's foot in a ballet shoe "en pointe".

**[0032]** FIGS. 2A-B show examples of mis-alignment of a dancer's foot in a ballet shoe "en pointe".

**[0033]** FIG. 3 shows a top view of an example of an adjustment pad for use in a ballet shoe.

**[0034]** FIG. 4 shows a bottom view of the adjustment pad of FIG. 3.

**[0035]** FIG. 5 shows a left front perspective view of the adjustment pad of FIG. 3.

**[0036]** FIG. 6 shows a right front perspective view of the adjustment pad of FIG. 3.

**[0037]** FIG. 7 shows a left side view of the adjustment pad of FIG. 3.

**[0038]** FIG. 8 shows a right side view of the adjustment pad of FIG. 3.

**[0039]** FIG. 9 shows a back view of the adjustment pad of FIG. 3.

**[0040]** FIG. 10 shows an example of the adjustment pad positioned to correct counter-clockwise twisting.

**[0041]** FIG. 11 shows an example of the adjustment pad positioned to correct clockwise twisting.

**[0042]** FIG. 12 shows a ballet pointe shoe with a portion of the toe box cut away to show the adjustment pad in the shoe.

**[0043]** FIG. 13 shows an anatomical drawing of a typical foot.

#### DETAILED DESCRIPTION

**[0044]** Representative embodiments according to the inventive subject matter are shown in FIGS. 3-12, wherein the same or generally similar features sharing common reference numerals.

**[0045]** The inventive subject matter is directed to a pad that volumetrically configures the toe box for a customized, desired alignment of the foot and lower leg when the dancer is en pointe. In certain embodiments, the pad configures the toe box so that it counteracts a twisting of the foot that would otherwise occur in the toe box in the absence of the adjustment pad. The counteraction of the pad may be used to adjust the dancer's foot to a neutral (FIG. 1) or otherwise desired foot-leg alignment.

**[0046]** FIG. 3 shows a top view of an example of an adjustment pad 10 for use in a ballet shoe, in particular, in a pointe or "toe" shoe. The adjustment pad 10 may generally be a wedge of one or more materials. As used herein, the designations of "top" and "bottom" are for convenience and ease of description. In some embodiments, the adjustment pad 10 may be used with either the "top" or "bottom" surface in contact with the dancer's foot and may be used with either a right foot or a left foot. Accordingly, FIG. 3 shows a view of a surface 12, which will be referred to as the top surface 12. The surface 12 has a front edge 121 and a back edge 124. In some embodiments, the front edge 121 may be rounded, for example, shaped to fit into the rounded end of the toe box or to follow a general contour of the toe area of the foot. The back edge 124 may be linear, or may be curved or lobed (not shown). The embodiments are not limited to these examples. For the purposes of discussion, the axis from front to back is designated as the y-axis as shown in the axes on the left side of the drawing.

**[0047]** The surface 12 also has a first side 122 and a second side 123. Again, for the purposes of discussion, the first side 122 may be the right side of the pad 10, e.g., when the surface 12 is the top surface. The second side 123 may be the left side of the pad 10, e.g., when the surface 12 is the

top surface. For the purposes of discussion, the axis from the first side 122 to the second side 123 is designated as the x-axis shown in the axes.

[0048] The sides 121, 122, 123, 124 are generally configured to follow and receive the contour of the dancer's forefoot. In this light, the first side 122 and the second side 123 may not be parallel, and may slightly diverge going distally to proximally so that they are closer together at the front than at the back, as seen in the Figures. Accordingly, in some embodiments, the first and second sides may follow a contour of the sole portion of the toe box, e.g., in a curved or arcuate shape.

[0049] With respect to the foot under which the pad 10 is placed, for example, when the pad 10 is placed with the surface 12 in contact with, and under, a left foot, the first side 122 may be the medial side, and the second side 123 may be the lateral side. Similarly, when the pad 10 is placed with the surface 12 in contact with, and under, a right foot, the first side 122 may be the lateral side, and the second side 123 may be the medial side.

[0050] The adjustment pad 10 may have four "corners" 126, 128, 130 and 132. As used herein, "corner" is not limited to a right angle, or to an angle between two straight lines, although the corners may be so shaped. "Corner" may more generally refer to a transitional area from one edge to another, and may be curved or rounded. For example, the first front corner 128 is defined by a transition area between the front edge 121 and the first side 122. The second front corner 126 is defined by a transition area between the front edge 121 and the second side 123. The first back corner 130 is defined by a transition area between the first side 122 and the back edge 124. The second back corner 132 is defined by a transition area between the second side 123 and the back edge 124.

[0051] FIG. 4 shows a bottom view of the adjustment pad 10. The bottom view shows a second surface 14, which will be referred to as the bottom surface 14. More generally, the surface 14 is the surface opposite the surface 12. The bottom surface 14 has a front edge 141 and a back edge 144, which correspond to the front edge 121 and back edge 124, respectively. The bottom surface 14 also has a first side 142 and a second side 143, which correspond to the first side 122 and the second side 123, respectively.

[0052] FIG. 5 shows a left front perspective view of the adjustment pad 10. As shown in the figure, the adjustment pad 10 tapers in thickness along two different axes. The pad 10 tapers along the x-axis, e.g., from the second side 123 to the first side 122. The pad 10 also tapers along the y-axis, e.g., from the front edges 121, 141 to the back edges 124, 144. Stated another way, the thickness of the pad, as defined along the z-axis, changes from one side to the opposite side.

[0053] In the embodiment shown, the second front corner 126 is the thickest of the four corners. For some applications, the second front corner 126 may have a thickness of between about 1.1 millimeters (mm) to about 2 mm, for example, and without limitation, 1.2 mm, 1.4 mm, 1.5 mm, or 1.7 mm. The second back corner 132 may be less thick than the second front corner 126, but thicker than the first front corner and first back corner. The second back corner 132 may have a thickness of between about 0.3 mm to about 0.9 mm, for example, and without limitation, 0.4 mm, 0.5 mm, or 0.6 mm.

[0054] Either of the first front corner 128 and the first back corner 130 may be less thick than either of the second front

corner 126 and the second back corner 132. In some embodiments, the thickness of the first front and back corners 128, 130 may be the same. The first front and back corners 128, 130 may have a thickness of between about 0.05 mm to about 0.2 mm, for example, and without limitation, 0.07 mm, 0.09 mm, 0.1 mm, or 0.15 mm. In other embodiments, the first front corner 128 may be thicker than the first back corner 130.

[0055] In the embodiment shown, the separation of the second side 123 of the surface 12 and the second side 143 of the surface 14 decreases from the second side to the first side along the x-axis, and also from the second front corner 126 to the second back corner 132. Analogously, the separation of the front edge 121 of the surface 12 and the front edge 141 of the surface 14 decreases from the front edge to the back edge along the y-axis, and also from the second front corner 126 to the first front corner 128.

[0056] The pad 10 may also be described using a plurality of regions, for example, quadrants A, B, C, and D. As shown, quadrant A may comprise the least thick area of pad material, and quadrant D may comprise thickest area of pad material. Examples of pad material are described further below. The material in each quadrant may taper in thickness within the quadrant, such that the thinnest part of one quadrant may correspond to the thickest part of an adjacent quadrant. Describing one quadrant as "thicker" or "thinner" than another may refer, for example, to an average thickness, or to the thickest (or thinnest) part of the quadrant.

[0057] As shall be seen further below, placing the pad 10 under the forefoot of a dancer in a toe shoe can raise one part of the forefoot relative to another. Generally, the thicker part of the pad, e.g., quadrant D, raises the part of the foot under which it is placed more than the other quadrants. Different corrections to the foot alignment can be achieved according to how the quadrants are placed with respect to the foot.

[0058] Quadrant B may be thinner than Quadrant D. Quadrant B may be thicker than quadrant C, or may be about the same thickness. Quadrant B may raise the part of the foot under which it is placed more, relative to Quadrant A.

[0059] Quadrant C may be thinner than quadrant D and thicker than quadrant A. Accordingly, quadrant C may raise its respective portion of the foot less than quadrant D, but more than quadrant A. Providing a plurality of regions of different thickness or compressibility may allow the different anatomical areas of the foot to be raised or lowered relative to each other to affect the alignment of the foot in the shoe. Although four quadrants are shown, more or fewer areas of differing thicknesses may be provided for a customized effect.

[0060] FIG. 6 shows a right front perspective view of the adjustment pad 10. FIG. 6 shows that the pad 10 tapers upwardly from the first back corner 130 to the second front corner 126 along transverse line L1. The pad 10 also tapers upwardly from the first front corner 128 to the second back corner 132 along the transverse line L2.

[0061] In other embodiments, however, the pad 10 may taper differently. For example, the pad 10 may taper downwardly from the first back corner 130 to the second front corner 126 along transverse line L1 and/or downwardly from the first front corner 128 to the second back corner 132 along the transverse line L2.

[0062] FIG. 7 shows a view of the adjustment pad 10 looking left. The view shows the first sides 122, 142, the first front corner 128, and the first back corner 130. Also illus-

trated is the thickness of the back edge along the z-axis at the first back corner **130**, which is greater than the thickness of the front edge at the first front corner **128**. Stated another way, the height of edge **124** relative to edge **144** may be greater than the height of edge **121** relative to edge **141**.

[0063] FIG. **8** shows a view of the adjustment pad **10** looking right. The view shows the second sides **123**, **143**, the second front corner **126** and the second back corner **132**. Also illustrated is the thickness of the back edge along the z-axis at the second back corner **132**, which tapers to the lesser thickness of the front edge at the second front corner **126**.

[0064] FIG. **9** shows a view of the adjustment pad **10** from the front edge looking toward the back. The view shows the x-axis decreasing taper from the second side **123** to the first side **122**.

[0065] In some embodiments, the pad **10** may be reversible, in a turned-over position, e.g., such that surface **14** is the “top” and the surface **12** is the “bottom”. This may be possible in an embodiment where the surfaces **12** and **14** are generally planar, e.g., flat, and where whichever surface is the “top” (in contact with the dancer’s foot) exhibits the tapering described herein when the other surface is in contact with the shoe. In a reversible pad, the x-axis tapering increases from the second side to the first side. That is, the thickness between the surface **12** and the surface **14** is larger between the first sides **122** and **142** than between the second sides **123** and **143**. The first back corner **130** is thicker than the second back corner **132**. A reversible (flipped) pad may allow for either foot to be corrected using the same pad. A reversible pad may also, or alternatively, allow correction of either a clockwise or counter-clockwise twist on a given foot using the same pad.

[0066] FIG. **10** shows an example of the adjustment pad **10** positioned to correct counter-clockwise twisting. A right foot is shown. The pad **10** may be oriented such that the surface **14** is the bottom surface, and the surface **12** is the top surface in contact with the sole of the forefoot. To correct for counter-clockwise twisting, the thicker side of the pad **10**, e.g., the second side **123**, **143**, or quadrants D and B, are placed under the medial side of the foot, with the thickest quadrant D under at least a portion of the big toe.

[0067] FIG. **11** shows an example of the adjustment pad **10** positioned to correct clockwise twisting. Again, a right foot is shown. The pad **10** may be oriented such that the surface **12** is the bottom surface (e.g., as shown in FIG. **10**) in contact with the shoe. To correct for clockwise twisting, the thicker side of the pad **10**, e.g., the second side **123**, **143**, or quadrants D and B, are placed under the lateral side of the foot, with the thickest quadrant D under at least a portion of the smallest toe.

[0068] When the foot and adjustment pad **10** are en pointe in the dance shoe, the pad as shown in FIG. **10** raises the medial side (big toe and ball) of the forefoot relative to the lateral side of the foot and reduces the ability of that portion of the foot to “fall” inwardly in a counter-clockwise direction. The thicker side of the pad **10**, e.g., quadrants D and B, in effect, pushes the medial side of the forefoot in a generally clockwise direction.

[0069] When the foot and adjustment pad **10** are en pointe in the dance shoe, the pad, as shown in FIG. **11**, raises the lateral side (small toe) of the forefoot relative to the medial side of the foot and reduces the ability of that portion of the foot to twist inwardly in a clockwise direction. The thicker

side of the pad **10**, e.g., quadrants D and B, in effect, pushes the lateral side of the forefoot in a generally counter-clockwise direction.

[0070] FIG. **12** shows a ballet point shoe with a portion of the toe box cut away to show the adjustment pad **10** in the shoe. The front edge **121** of the pad is positioned at the front of the toe box and may contact some portion of the phalanges or toes. The back edge may be positioned behind the front of the toe box, and may contact the foot at or near the metatarsal heads.

[0071] FIG. **13** shows an anatomical mapping of a typical foot as a reference. A right foot is shown in both the medial and lateral views. The “forefoot” includes the phalanges (toes) and metatarsals and it provides the ground contact area of the ball of the foot. It consists of most of the bony architecture of the foot including phalanges to the toes, five metatarsal bones and the two sesamoid bones of the big toe joint. The “midfoot” is the intersection between the forefoot and rearfoot. Its anatomic location is at the peak or highest part of the arch and has important joints connecting it to the forefoot and the rearfoot region. It consists of five bones including three cuneiform bones, and the navicular and cuboid bones. The “rearfoot” connects to the midfoot and to the ankle and provides the ground contact area of the heel region of the foot. It consists of the bony architecture of the calcaneus and talus.

[0072] When in use, embodiments of the adjustment pad described herein may be positioned in a pointe shoe such that the front edge of the pad is under at least a portion of the phalanges, and the back edge is under or near the heads of the metatarsals, e.g., where the metatarsals and phalanges meet.

[0073] Material

[0074] The adjustment pad **10** may be made of a material that has limited compressibility, such as, for example, a dense foam. That is, the material should provide sufficient support to alter the alignment of the foot in the shoe en pointe, without being so hard or rigid as to be uncomfortable. The material should be able to resist the pressure of the foot that results in the alignment problem. Softer materials may also be used, with the thickness of different portions of the pad being provided to account for compressibility of softer material.

[0075] Materials that provide firm support in a relatively thin design may include, for example, high-molecular-weight, high-density polyethylene (HMW-HDPE), thermo plastics, polyolefins, e.g., polypropylene, copolymer, or carbon graphite composites. Other materials that may be used include cork, and polyethylene foams.

[0076] The surfaces **12** and **14** may be the exposed surface of the material of the pad. In some embodiments, one or both of the surfaces may be generally smooth. Alternatively, one or both of the surfaces may have a texture. The texture may include, for example, regular or irregular undulations, a gritty or rough texture, raised bumps, pits, or other variations in the surface. Texturing may help the toe box and foot frictionally engage each other, acting against slippage and thereby improving support and comfort and helping to avoid blisters and callouses.

[0077] In some embodiments, an additional covering may be affixed to one or both of the surfaces **12** and **14**. The covering material used on the intended top surface may be different from a covering material used on the intended bottom surface. Covering materials may include, for



example, natural or synthetic fabrics such as silk, cotton, or nylon. Covering materials can include materials such as felt or cork. Still other covering materials can include rubber, silicone, or latex. The embodiments are not limited to these examples. A covering material may also be selected to improve frictional engagement or comfort.

**[0078]** For example, a top surface covering may include a compressible or cushioning material to improve comfort to the wearer. Some top surface coverings may provide some degree of moisture absorption or control, odor control, and/or anti-bacterial properties. Other coverings may provide a higher coefficient of friction compared to the pad material, to reduce slippage between the dancer's foot (which is usually clothed in a slippery tight or stocking) and the shoe when applied to the top surface, and/or to reduce movement of the pad in the shoe when applied to the bottom surface. The bottom surface may be affixed to the shoe, for example, with a glue or other bonding layer.

#### Alternative Embodiments

**[0079]** In some embodiments, the functional aspects of the adjustment pad as described above may be provided by an adjustment pad having varying compressibility rather than varying thickness. Such a pad may have generally uniform thickness, but may have a higher compressibility or higher durometer material in quadrant D, and a lesser density or lesser durometer material in quadrant A, for example. The corrective effects may be provided, then, by a pad that compresses less in the area of interest (e.g., quadrant D) and compresses more in the other areas. For example, for a pad made of a given material, such as a foamed EVA or PU, higher density means less compressibility, and lower density means more compressibility. In such a pad, the density, rather than the thickness, may taper or step downward from the first side to the second side and from the front edge to the back edge.

**[0080]** In some embodiments, the adjustment pad may be affixed to, or be a component of, a full-length or modular insole configured for placement inside of a pointe shoe. Such an insole may be configured to be removably placed in the pointe shoe, or may be affixed so as not to be removable.

**[0081]** Method of Manufacture

**[0082]** Adjustment pads as described herein may be made in various ways, which may be dependent on the material used. In some embodiments, an adjustment pad may be formed in a mold, for example, the components of a foam may be combined in a shaped mold where the foam is created and cured to take the shape of the mold. Other materials may be poured in liquid form into a mold and baked, cured, or otherwise allowed to harden.

**[0083]** Still other adjustment pads may be, for example, printed by a three-dimensional (3D) printer. Others may be carved or etched from a block of material, such as foam or cork.

**[0084]** In some embodiments, an adjustment pad may be constructed from a plurality of layers of differing materials laminated together.

**[0085]** Persons skilled in the art will recognize that many modifications and variations are possible in the details, materials, and arrangements of the parts and actions which have been described and illustrated to explain the nature of the inventive subject matter, and that such modifications and variations do not depart from the spirit and scope of the teachings and claims contained therein.

**[0086]** The principles described above about any particular example can be combined with the principles described in connection with any one or more of the other examples. Accordingly, this detailed description shall not be construed in a limiting sense, and following a review of this disclosure, those of ordinary skill in the art will appreciate the wide variety of systems that can be devised using the various concepts described herein. Moreover, those of ordinary skill in the art will appreciate that the exemplary embodiments disclosed herein can be adapted to various configurations without departing from the disclosed principles.

**[0087]** The previous description of the disclosed embodiments is provided to enable any person skilled in the art to make or use the disclosed innovations. Various modifications to those embodiments will be plain to those skilled in the art, and the generic principles defined herein may be applied to other embodiments without departing from the spirit or scope of this disclosure. Thus, the claimed inventions are not intended to be limited to the embodiments shown herein, but are to be accorded the full scope consistent with the language of the claims, wherein reference to an element in the singular, such as by use of the article "a" or "an" is not intended to mean "one and only one" unless specifically so stated, but rather "one or more".

**[0088]** As used herein the terms "part", "portion", and "section" are generally synonymous terms and do not imply that something is or is not a discrete element or subcomponent in a larger construct or is or is not a non-discrete subdivision of a larger unitary construct, unless context indicates otherwise.

**[0089]** All structural and functional equivalents to the elements of the various embodiments described throughout the disclosure that are known or later come to be known to those of ordinary skill in the art are intended to be encompassed by the features described and claimed herein. Moreover, nothing disclosed herein is intended to be dedicated to the public regardless of whether such disclosure is explicitly recited in the claims.

**[0090]** The inventor reserves all rights to the subject matter disclosed herein, including the right to claim all that comes within the scope and spirit of the following claims:

1. A foot alignment adjuster, comprising:

an adjustment pad having a top surface and a bottom surface and configured to fit in a dance shoe under a dancer's forefoot;

wherein the adjustment pad has a front edge shaped to be placed at a front of the dance shoe, a back edge, a first side, and a second side;

wherein the front edge defines a first front corner with the first side and a second front corner with the second side;

wherein the back edge defines a first back corner with the first side and a second back corner with the second side; and

wherein a thickness of the adjustment pad increases from the first side to the second side.

2. The foot alignment adjuster of claim 1, wherein the first side is a left side and the second side is a right side.

3. The foot alignment adjuster of claim 1, wherein the first side is a right side and the second side is a left side.

4. The foot alignment adjuster of claim 1, wherein the bottom surface is affixable to the dance shoe.

5. The foot alignment adjuster of claim 1, wherein the adjustment pad is removable from the dance shoe.

6. The foot alignment adjuster of claim 1, further comprising: a covering affixed to at least one of the top surface or the bottom surface, wherein the covering comprises a different material than the adjustment pad.

7. The foot alignment adjuster of claim 1, wherein the adjustment pad defines a plurality of regions, each respective region having a thickness different from the other respective regions.

8. The foot alignment adjuster of claim 1, wherein placement of the adjustment pad under one of the dancer's forefeet in the dance shoe reduces a twist in the dancer's foot when en pointe.

9. The foot alignment adjuster of claim 8, wherein placing the first side under a medial side of the dancer's forefoot reduces a clockwise twist, and wherein placing the second side under the medial side of the dancer's forefoot reduces a counter-clockwise twist.

10. The foot alignment adjuster of claim 8, wherein placing the first side under a lateral side of the dancer's forefoot reduces a clockwise twist, and wherein placing the second side under the lateral side of the dancer's forefoot reduces a counter-clockwise twist.

11. The foot alignment adjuster of claim 8, wherein placing the first side under a lateral side of one of the dancer's forefeet reduces a clockwise twist in the one foot, and wherein placing the first side under a medial side of the other of the dancer's forefeet reduces a counter-clockwise twist in the other foot.

12. The foot alignment adjuster of claim 1, wherein the adjustment pad is configured for placement in either a left dance shoe or a right dance shoe in any of the following configurations:

the first side aligned with a medial side of the right dance shoe and the second side aligned with a lateral side of the right dance shoe;

the first side aligned with a lateral side of the right dance shoe and the second side aligned with a medial side of the right dance shoe;

the first side aligned with a medial side of the left dance shoe and the second side aligned with a lateral side of the left dance shoe; and

the first side aligned with a lateral side of the left dance shoe and the second side aligned with a medial side of the left dance shoe.

13. The foot alignment adjuster of claim 1, wherein the thickness of the adjustment pad decreases from the back edge to the front edge such that the thickness of the first front corner is less than the thickness of the first back corner.

14. The foot alignment adjuster of claim 1, wherein the thickness of the adjustment pad increases from the back edge to the front edge such that the thickness of the second back corner is less than the thickness of the second front corner.

15. The foot alignment adjuster of claim 1, wherein the thickness of the first front corner is less than the thickness of the second front corner.

16. The foot alignment adjuster of claim 1, wherein the thickness of the first back corner is less than the thickness of the second back corner.

17. The foot alignment adjuster of claim 1, wherein the thickness of the first back corner is less than the thickness of the second front corner.

18. The foot alignment adjuster of claim 1, wherein the thickness of the second front corner is less than the thickness of the second back corner.

19. The foot alignment adjuster of claim 1, wherein the front edge is curved.

20. The foot alignment adjuster of claim 1, wherein the adjustment pad is coupled to one of a modular insole or a full-length insole.

21. The foot alignment adjuster of claim 1, wherein a thickness of the adjustment pad changes from the back edge to the front edge

22. A method of making a foot alignment adjuster, comprising:

forming an adjustment pad comprising a top surface and a bottom surface and configured to fit in a dance shoe under a dancer's forefoot;

wherein the adjustment pad has a front edge shaped to be placed at a front of the dance shoe, a back edge, a first side, and a second side;

wherein the front edge defines a first front corner with the first side and a second front corner with the second side; wherein the back edge defines a first back corner with the first side and a second back corner with the second side; and

wherein a thickness of the adjustment pad increases from the first side to the second side.

23. The method of claim 22, wherein forming the adjustment pad comprises one of:

molding the adjustment pad;

3-D printing the adjustment pad; or

carving the adjustment pad.

24. A foot alignment adjuster, comprising:

an adjustment pad having a top surface and a bottom surface and configured to fit in a dance shoe under a dancer's forefoot;

wherein the adjustment pad has a front edge shaped to be placed at a front of the dance shoe, a back edge, a first side and a second side; and

wherein a density of the adjustment pad decreases from the first side to the second side.

25. The foot alignment adjuster of claim 24, wherein a density of the adjustment pad increases from the back edge to the front edge.

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