



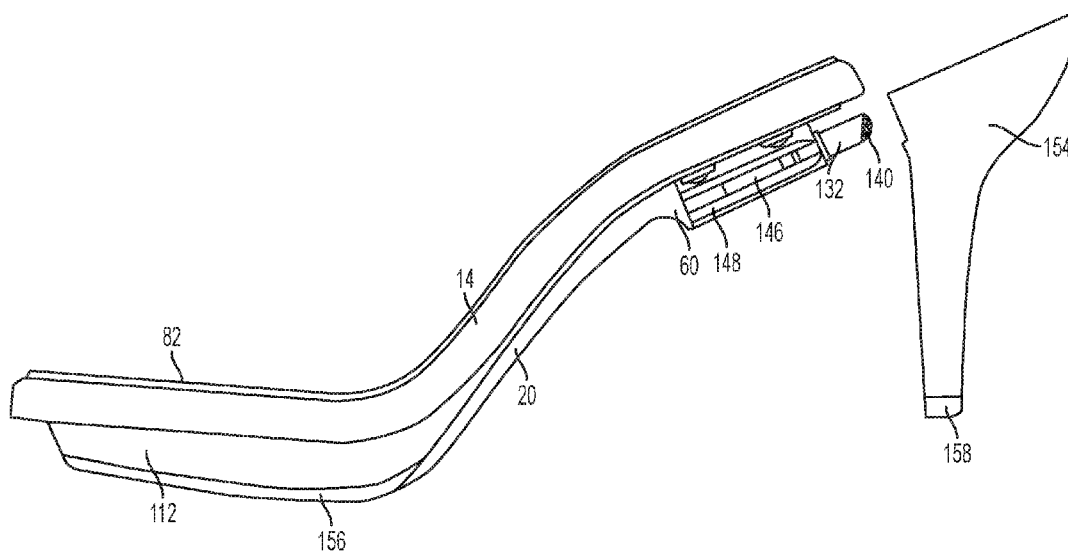
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(19) **United States**(12) **Patent Application Publication**
Truchsess(10) **Pub. No.: US 2017/0055641 A1**(43) **Pub. Date: Mar. 2, 2017**(54) **FOOTWEAR***A43B 17/18* (2006.01)*A43B 13/12* (2006.01)*A43B 7/08* (2006.01)(71) Applicant: **Vincent L. Truchsess**, Redwood City,
CA (US)(52) **U.S. CL.**CPC *A43B 21/48* (2013.01); *A43B 13/125*(2013.01); *A43B 7/087* (2013.01); *A43B 17/18*(2013.01); *A43B 17/08* (2013.01)(72) Inventor: **Vincent L. Truchsess**, Redwood City,
CA (US)(21) Appl. No.: **15/255,054**(22) Filed: **Sep. 1, 2016**

(57)

ABSTRACT**Related U.S. Application Data**(60) Provisional application No. 62/213,059, filed on Sep.
1, 2015.**Publication Classification**(51) **Int. Cl.***A43B 21/48* (2006.01)*A43B 17/08* (2006.01)

Footwear is configured to be worn by a wearer's foot. The footwear includes a sole further comprises an outer sole. A central portion is formed within the outer sole. A seat piece is connected to the central portion and further comprising a notch receiver. A heel carrier plane is attached to an underside of central portion with a heel ramp. A heel carrier is attached to the heel carrier plane. A high heel is attached to the heel carrier.





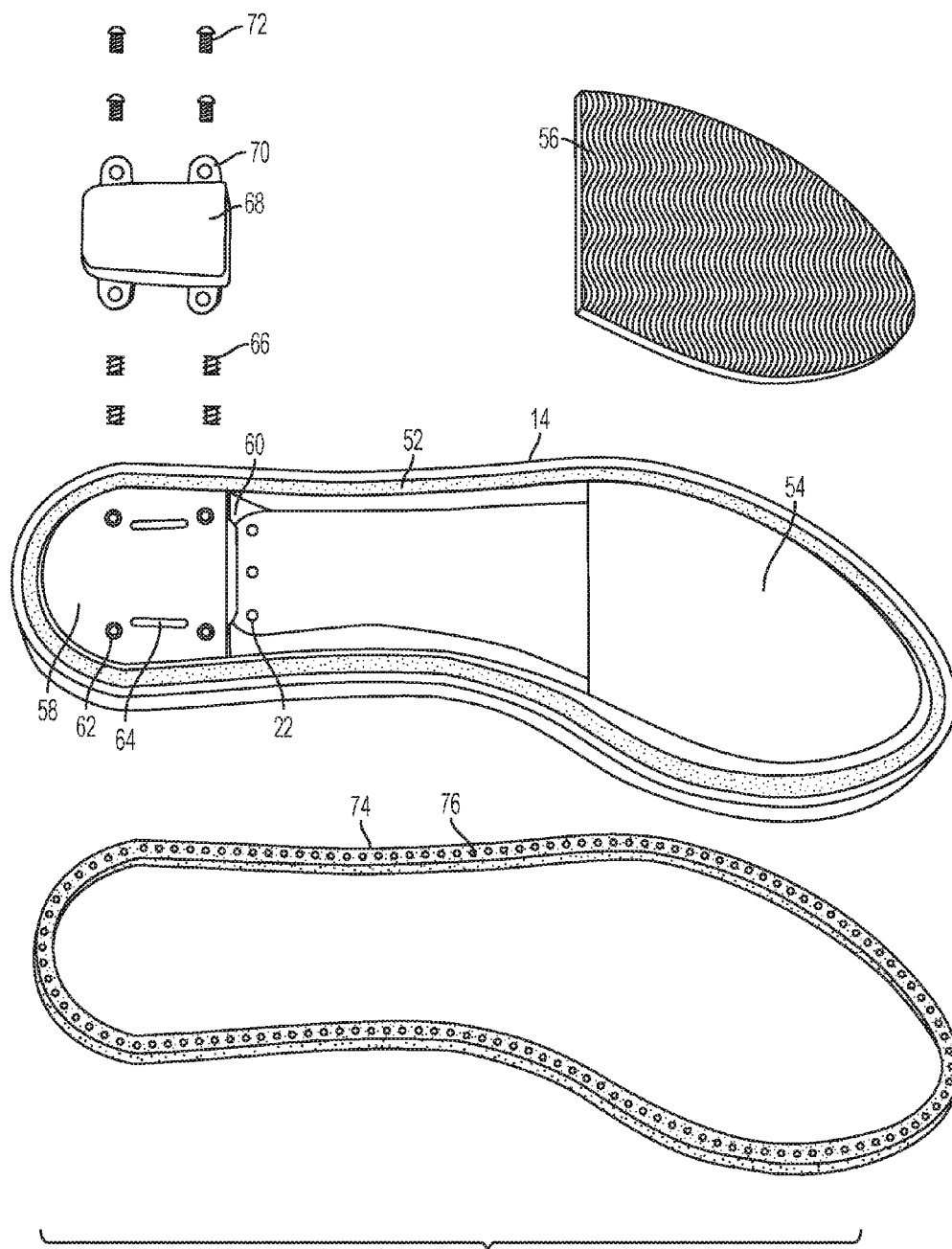


FIG. 2

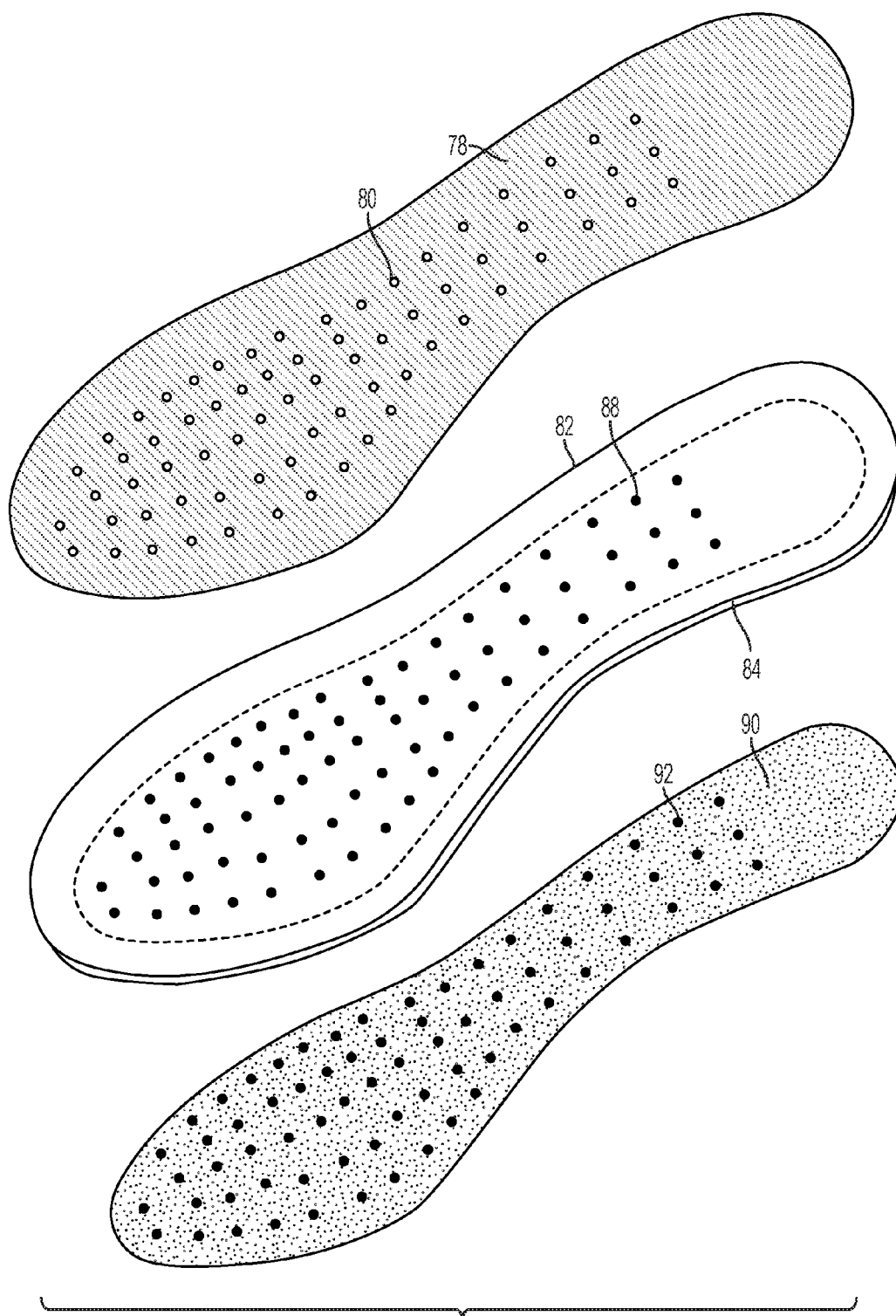


FIG. 3

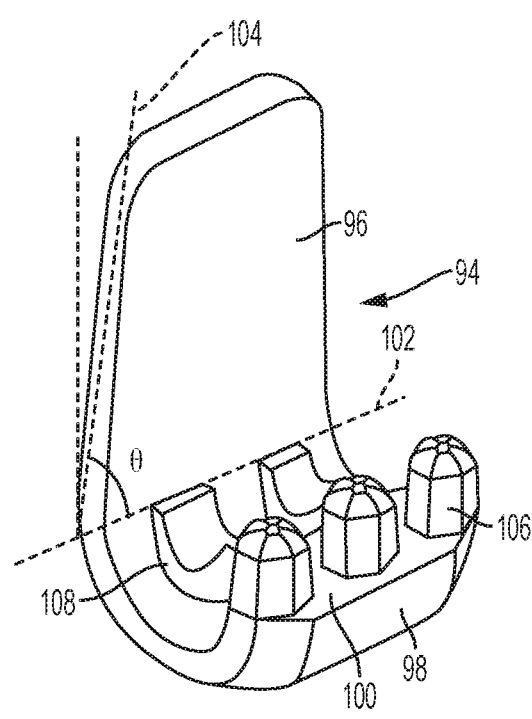


FIG. 4

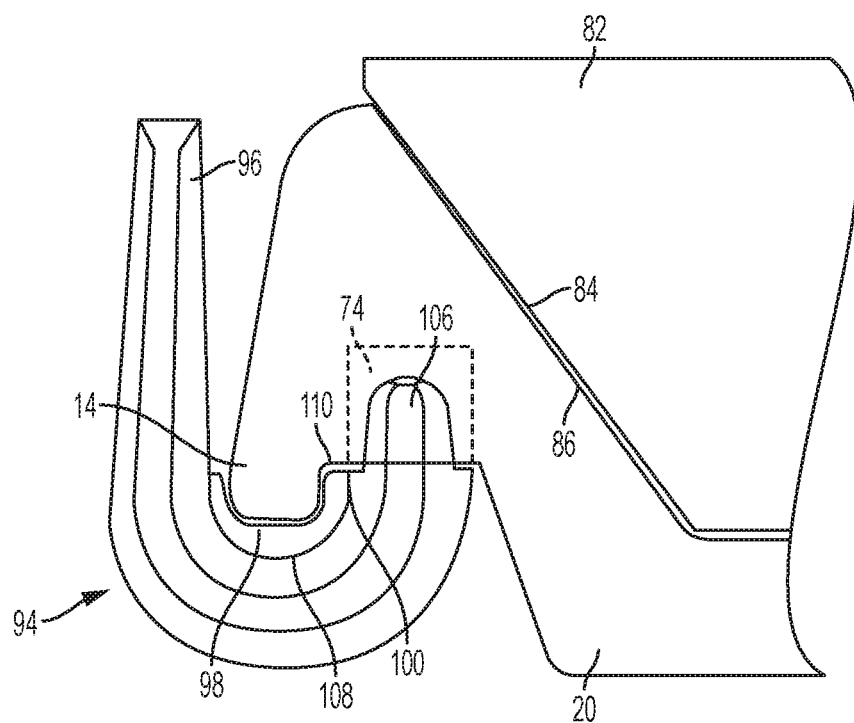


FIG. 5

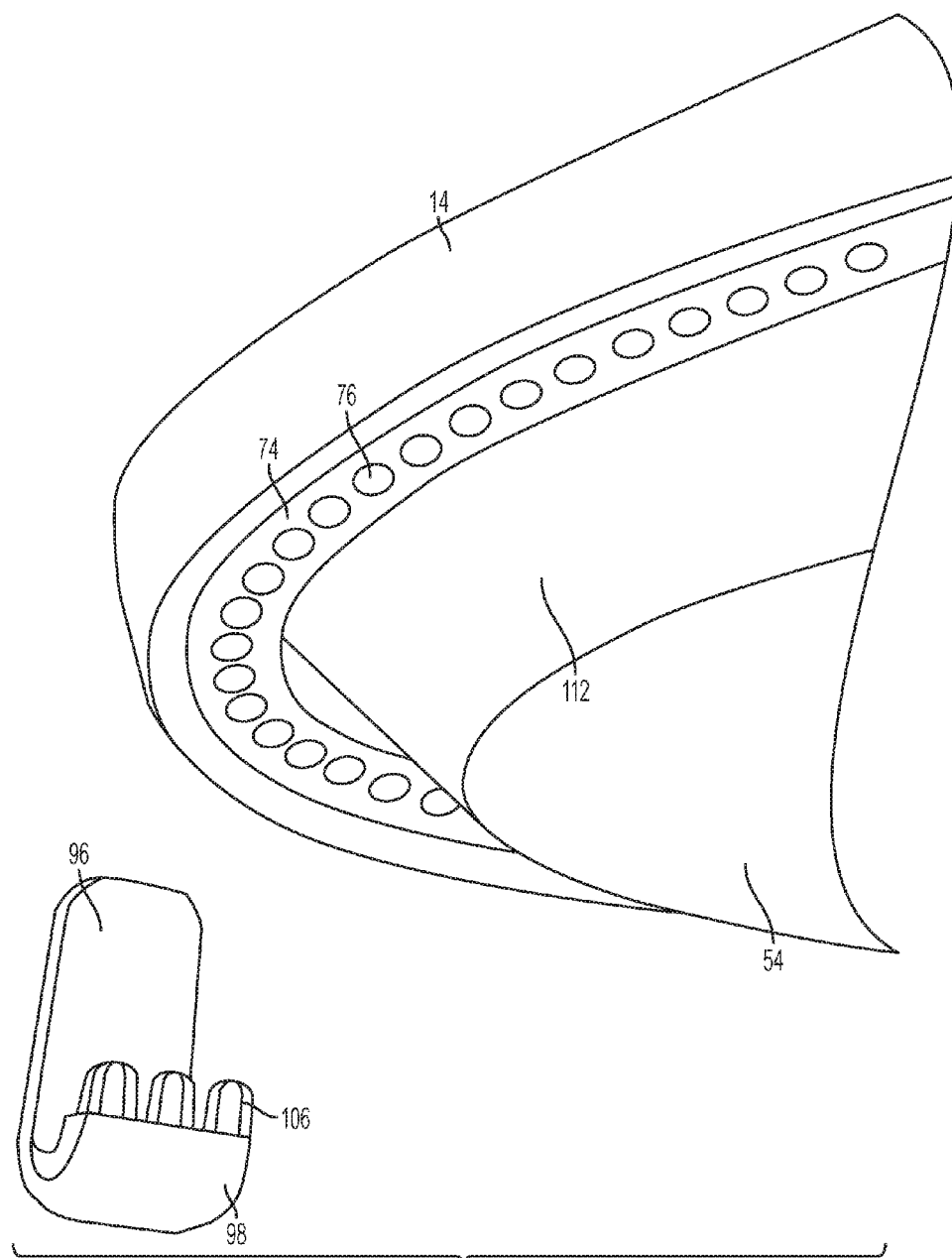


FIG. 6

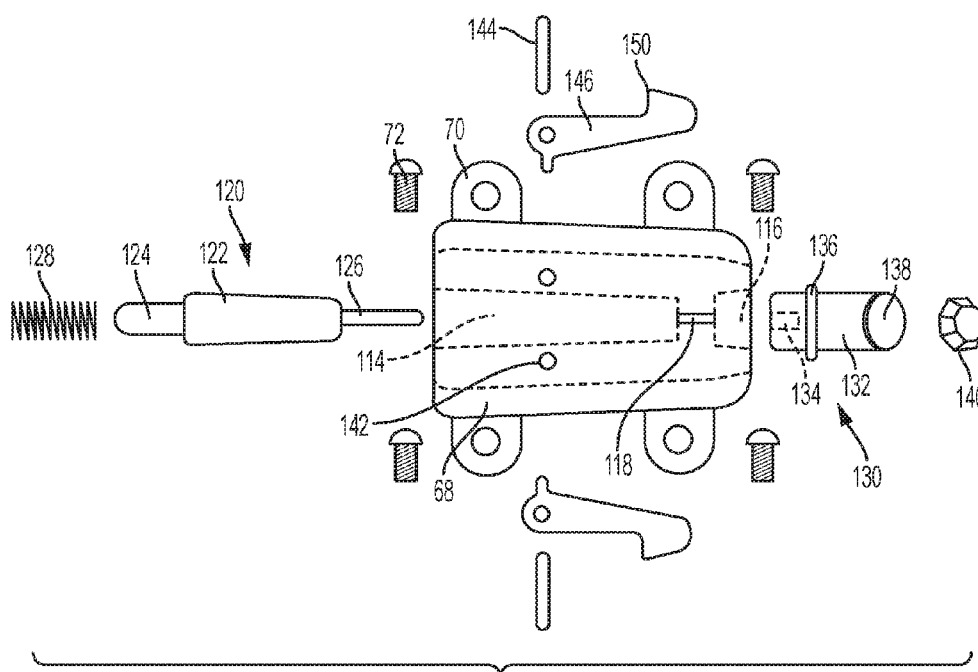


FIG. 7

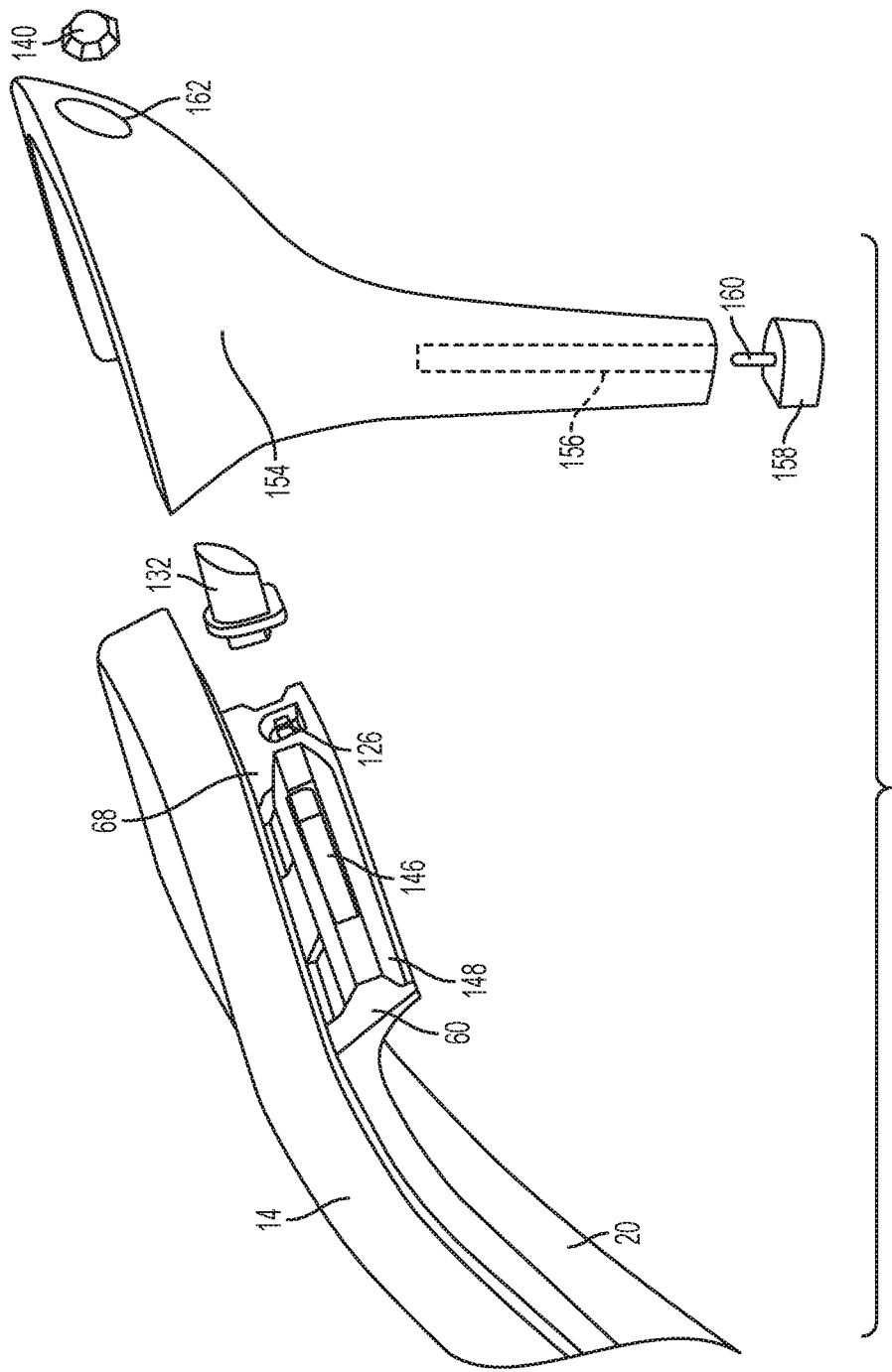


FIG. 8

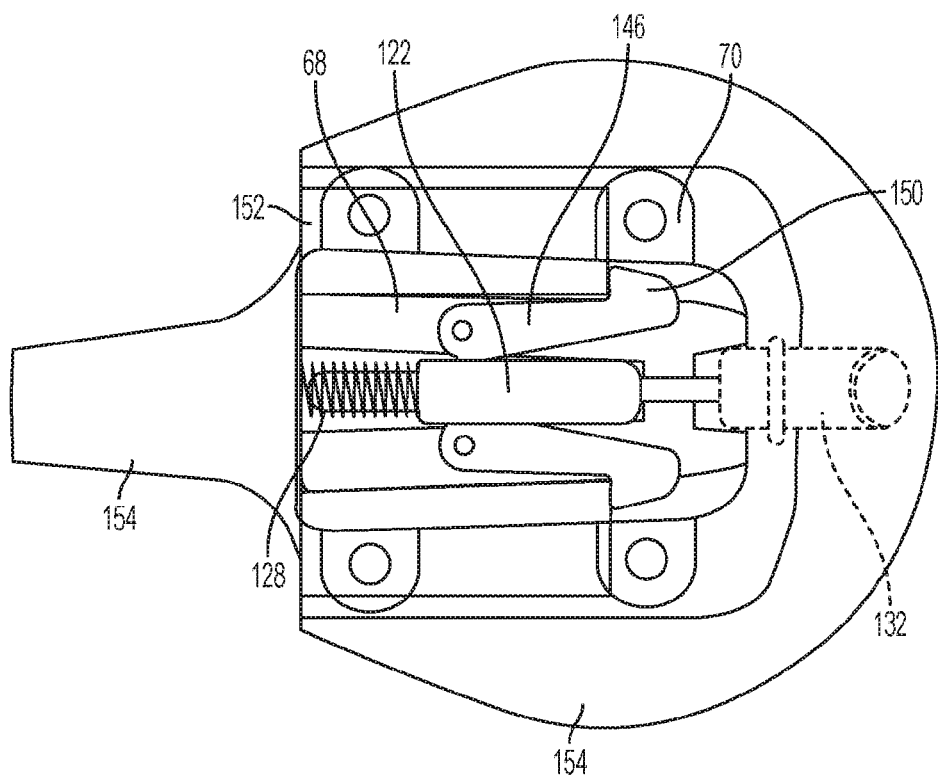


FIG. 9

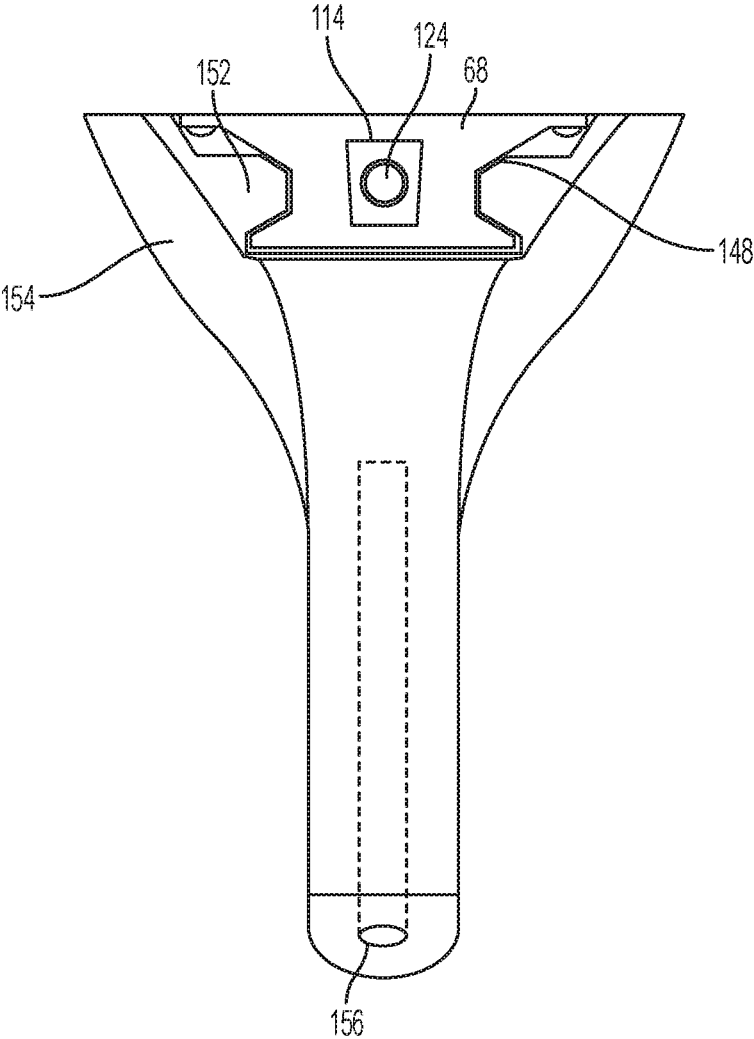


FIG. 10

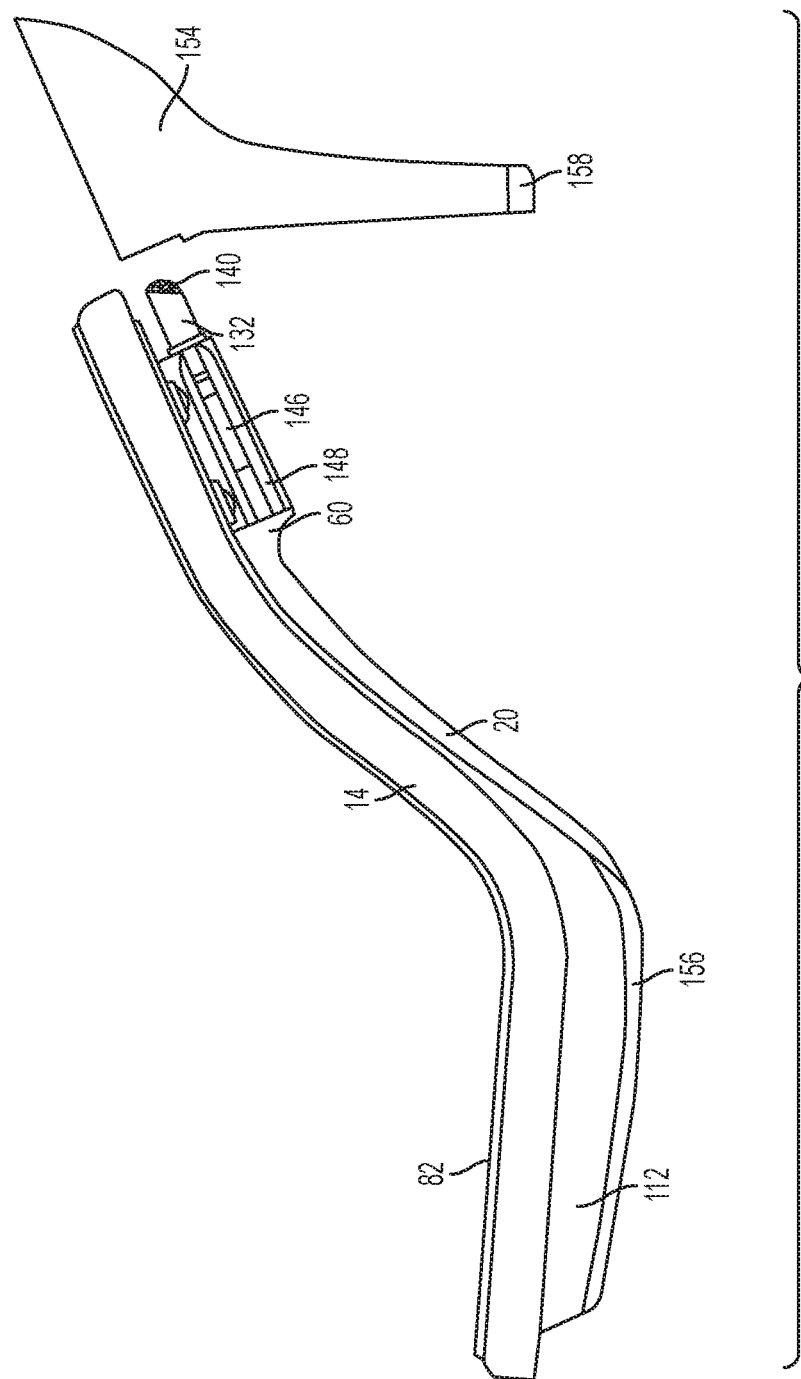


FIG. 11

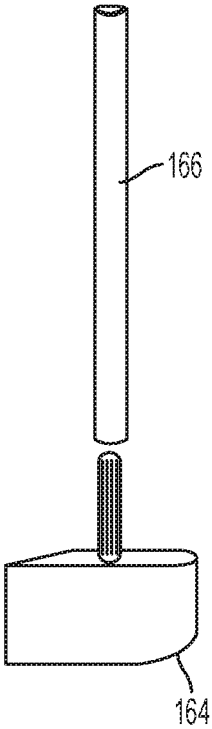


FIG. 12

FOOTWEAR

RELATED APPLICATION

[0001] This application claims priority to provisional patent application U.S. Ser. No. 62/213,059 filed on Sep. 1, 2016, the entire contents of which is herein incorporated by reference.

BACKGROUND

[0002] The embodiments herein relate generally to articles of apparel. In particular embodiments relate to footwear.

[0003] Prior to embodiments of the disclosed invention, podiatry issues such as bunions, blistering and chaffing resulted from ill-fitting shoes. This occurred, in part, from straps and upper parts being anchored in positions that could not be adjusted in standard manufacturing of shoes. Embodiments of the disclosed invention solve these problems.

SUMMARY

[0004] Footwear is configured to be worn by a wearer's foot. The footwear includes a sole further comprises an outer sole. A central portion is formed within the outer sole. A seat piece is connected to the central portion and further comprising a notch receiver. A heel carrier plane is attached to an underside of central portion with a heel ramp. A heel carrier is attached to the heel carrier plane. A high heel is attached to the heel carrier.

[0005] In some embodiments, a rail system attachment cavity is immediately adjacent to the outer sole. A plurality of heel carrier cavities and a plurality of heel carrier alignment notches are formed within the heel carrier plane. A threaded insert is inserted into each heel carrier cavity.

[0006] A plurality of heel carrier attachment points are attached to the heel carrier. A screw, inserted through a heel carrier attachment points into a heel carrier cavity. A rail system, is inserted into the rail system attachment cavity and further comprising a plurality of equally spaced rail system cavities.

[0007] A clip is connected to the outer sole and the rail system. The clip includes a clip tail, joined to a clip round which terminates in a plurality of clip teeth. Clip ribs are attached to the clip round and configured to reinforce the clip. A clip round axis is orthogonal to the clip round. A clip tail axis is parallel to the clip tail. A clip angle is measured counterclockwise from the clip round axis to the clip tail axis. The clip angle θ is at least 60 degrees but no more than 120 degrees.

BRIEF DESCRIPTION OF THE FIGURES

[0008] The detailed description of some embodiments of the invention is made below with reference to the accompanying figures, wherein like numerals represent corresponding parts of the figures.

[0009] FIG. 1 shows a top exploded view of one embodiment of the present invention;

[0010] FIG. 2 shows a bottom exploded view of one embodiment of the present invention;

[0011] FIG. 3 shows an exploded view of one embodiment of the present invention;

[0012] FIG. 4 shows perspective view of one embodiment of the present invention;

[0013] FIG. 5 shows a side view of one embodiment of the present invention;

[0014] FIG. 6 shows a side assembly view of one embodiment of the present invention;

[0015] FIG. 7 shows an exploded view of one embodiment of the present invention;

[0016] FIG. 8 shows a perspective assembly view of one embodiment of the present invention;

[0017] FIG. 9 shows a top view of one embodiment of the present invention;

[0018] FIG. 10 shows a side view of one embodiment of the present invention;

[0019] FIG. 11 shows a side assembly view of one embodiment of the present invention;

[0020] FIG. 12 shows a side assembly view of one embodiment of the present invention.

DETAILED DESCRIPTION OF CERTAIN EMBODIMENTS

[0021] By way of example, and referring to FIG. 1, one embodiment of footwear 10 comprises sole 12. Sole 12 further comprises outer sole 14. Inside of outer sole 14 is toe box 16 which further comprises a plurality of toe box ribs 18. Toe box ribs 18 provide stability in the shoe when a wearer walks. Toe box 16 is joined to central portion 20 which further comprises exhaust ports 22. Exhaust ports 22 allow the heat generated from the wearer's foot to pass out of outer sole 14. Central portion 20 is connected to seat piece 24 with notch receiver 26 therebetween. Seat piece 24 can be further coupled to a loop fastener.

[0022] Inner mid sole plate 30 further comprises ball portion 32. Inner mid sole plate 30 should be made of a very rigid and strong material and act and takes place of a traditional shoe shank that helps support central portion 20. Ball portion 32 is attached to a plurality of toe risers 34 that are spaced by channels 36. Channels 36 permit heat to pass from the wearer. Ball portion 32 is further attached to inner mid sole risers 38. Inner mid sole risers 38 are separated by inner mid sole riser channels 40. There are a plurality of inner mid sole riser channels exhaust ports 42 through inner mid sole riser channels 40 and are aligned with exhaust ports 22. Inner mid sole plate 30 further comprises notch 44 which slides into notch receiver 26.

[0023] Mid sole hook fastener 46 is attached to seat piece 24 and rests upon inner mid sole risers 38. A toe box hook fastener 48 is attached to each of the plurality of toe risers 34. Ball portion 32 is connected to ball pad 50. Ball pad 50 further comprises a plurality of ball pad channels 52. The plurality of ball pad channels 52 are sweat channels that correspond to the plurality of toe risers 34 and the front of the inner mid sole riser channels 40. In some embodiments, ball pad 50 can be made from a synthetic viscoelastic urethane polymer used as a shock absorber and vibration damper such as the one sold under the trademark SORBOTHANE.

[0024] Turning to FIG. 2, outer sole 14 is immediately adjacent to rail system attachment cavity 52. Inside of rail system cavity 52 is toe tread attachment area 54 where toe tread 56 is attached. An underside of central portion 20 is connected to heel carrier plane 58 with heel ramp 60. Heel carrier plane 58 further comprises a plurality of heel carrier cavities 62 and a plurality of heel carrier alignment notches 64. A threaded insert 66 can be inserted into each heel carrier cavity 62.

[0025] Heel carrier 68 further comprises a plurality of heel carrier attachment points 70. To attach Heel carrier 68 to

heel carrier plane **58** first arrange the heel carrier alignment notches **64** between the plurality of heel carrier attachment points **70** then insert a screw **72** through each heel carrier attachment points **70** and into threaded insert **66**.

[0026] Rail system **74** is formed from a strong rubber material that can flex and sit into rail system attachment cavity **52**. Rail system **74** further comprises a plurality of equally spaced rail system cavities **76**.

[0027] Turning to FIG. 3, the padding layers are arranged as follows. Top layer **78** further comprises a plurality of top layer vent holes **80**. Top layer **78** is glued to insole **82**. Insole **82** further comprises insole angled edge **84**. Insole **82** can be made from a cellular urethane such as those sold under the trademark PORON. Insole angled edge **84** is configured to mate with outer sole inner wall **86**. Insole **82** further comprises a plurality of insole vent holes **88** which are aligned with the plurality of top layer vent holes **80**. Insole **82** is glued to insole loop fastener **90**. Insole loop fastener **90** further comprises a plurality of loop fastener vent holes **92**. Loop fastener **90** secures insole **82** to mid sole hook fastener **46**.

[0028] As shown in FIG. 4, clip **94** further comprises clip tail **96**. Clip tail **96** is joined to clip round **98** which terminates in clip shelf **100**. Clip round **98** is orthogonal to clip round axis **102**. Clip tail **96** is parallel to clip tail axis **104**. Clip angle θ is measured counterclockwise from clip round axis **102** to clip tail axis **104**. Clip angle θ is at least 60 degrees but no more than 120 degrees depending on where clip **94** is placed on rail system **74**. Clip shelf **100** is attached to a plurality of clip teeth **106**. In some embodiments, clip round **98** is reinforced with clip ribs **108**.

[0029] Turning to FIG. 5 and FIG. 6, clip round **98** is used to distribute equal pressure when in contact with outer sole **14** when clip **94** is placed into rail system **74**. Similarly, rail system inner shelf **110** rests upon clip shelf **100**. In some embodiments, toe tread attachment area **54** further comprises toe tread attachment area inclined edge **112**.

[0030] FIGS. 7-12 show one embodiment of heel carrier **68** in more detail. Heel carrier **68** further comprises heel carrier bolt cavity **114** attached to heel carrier button pin housing **116** with bolt tube **118**. Heel carrier bolt **120** further comprises bolt central portion **122** attached to bolt spring portion **124** and bolt shaft **126**. Bolt spring **128** is slid around bolt shaft **126**. Button pin **130** further comprises central housing **132** with bolt entry port **134** attached to button pin shelf **136**. Button pin cavity area **138** is where button **140** is attached. Pushing button **140** moves button pin **130** that pushes bolt shaft **126** and releases bolt spring **126**. Inclined edge **112** can be formed into a platform if desired by a user.

[0031] Heel carrier **68** further comprises heel carrier spring pin cavities **142** allow the heel carrier spring pin **144** to pass through heel carrier **68**. Heel carrier arm **146** is made of a very rigid and strong nylon material. Heel carrier arm **146** is used to hold heel carrier dove tails **148** in place. Heel carrier arm teeth **150** comes in contact with a high heel dove tail shelf **152**. Heel carrier arm teeth **150** holds back high heel **154** from falling away from the heel carrier **68**.

[0032] Heel **154** is made of a rigid and strong material and can be of a variety of shapes and sizes. Heel **154** further comprises heel shaft cavity **156** which is configured to accommodate heel pin **158** with heel pin shaft **160**. Heel pin **158** allows heel **154** to grip a surface that the wearer is walking on. Heel **154** further comprises heel tube **162** which is configured to permit button **140** to pass through.

[0033] Heel pin **164** can be configured with a slight angle in the back to help take pressure off lower back when taking a stride. Heel tube **166** secures heel pin **164** so that heel **154** does not break if there is a moment arm on heel pin **164**.

[0034] As used in this application, the term “a” or “an” means “at least one” or “one or more.”

[0035] As used in this application, the term “about” or “approximately” refers to a range of values within plus or minus 10% of the specified number.

[0036] As used in this application, the term “substantially” means that the actual value is within about 10% of the actual desired value, particularly within about 5% of the actual desired value and especially within about 1% of the actual desired value of any variable, element or limit set forth herein.

[0037] All references throughout this application, for example patent documents including issued or granted patents or equivalents, patent application publications, and non-patent literature documents or other source material, are hereby incorporated by reference herein in their entireties, as though individually incorporated by reference, to the extent each reference is at least partially not inconsistent with the disclosure in the present application (for example, a reference that is partially inconsistent is incorporated by reference except for the partially inconsistent portion of the reference).

[0038] A portion of the disclosure of this patent document contains material which is subject to copyright protection. The copyright owner has no objection to the facsimile reproduction by anyone of the patent document or the patent disclosure, as it appears in the Patent and Trademark Office patent file or records, but otherwise reserves all copyright rights whatsoever.

[0039] Any element in a claim that does not explicitly state “means for” performing a specified function, or “step for” performing a specified function, is not to be interpreted as a “means” or “step” clause as specified in 35 U.S.C. §112, ¶6. In particular, any use of “step of” in the claims is not intended to invoke the provision of 35 U.S.C. §112, ¶6.

[0040] Persons of ordinary skill in the art may appreciate that numerous design configurations may be possible to enjoy the functional benefits of the inventive systems. Thus, given the wide variety of configurations and arrangements of embodiments of the present invention the scope of the invention is reflected by the breadth of the claims below rather than narrowed by the embodiments described above.

What is claimed is:

1. Footwear, configured to be worn by a wearer's foot; the footwear comprising:

- a sole further comprises an outer sole
- a central portion, formed within the outer sole;
- a seat piece, connected to the central portion and further comprising a notch receiver;
- a heel carrier plane, attached to an underside of central portion with a heel ramp;
- a heel carrier attached to the heel carrier plane;
- a high heel, attached to the heel carrier.

2. The footwear of claim 1, further comprising: a toe box inside of outer sole and joined to the central portion; wherein the toe box further comprises a plurality of toe box ribs; wherein the toe box ribs provide stability to the wearer's foot.

3. The footwear of claim 2, wherein the central portion further comprises exhaust ports that dissipate heat generated from the wearer's foot.

4. The footwear of claim 3, further comprising a loop fastener connected to the seat piece.

5. The footwear of claim 4, further comprising an inner mid sole plate further comprising a notch, wherein the notch is joined into the notch receiver.

6. The footwear of claim 5, wherein the inner mid sole plate further comprises:

a ball portion;

a plurality of toe risers, attached to the Ball portion which are spaced by channels; wherein the channels dissipate heat from the wearer;

inner mid sole risers, attached to the ball portion and separated by inner mid sole riser channels;

a plurality of inner mid sole riser channels exhaust ports through the inner mid sole riser channels and aligned with the exhaust ports.

7. The footwear of claim 6, further comprising:

a mid sole hook fastener, attached to seat piece that rests upon the inner mid sole risers;

a toe box hook fastener, attached to each of the plurality of toe risers;

a ball pad, connected to the ball portion and further comprising a plurality of ball pad channels; wherein the plurality of ball pad channels are sweat channels that correspond to the plurality of toe risers and a front of the inner mid sole riser channels.

8. The footwear of claim 1, further comprising:

a rail system attachment cavity, immediately adjacent to the outer sole;

9. The footwear of claim 8, further comprising:

a plurality of heel carrier cavities and a plurality of heel carrier alignment notches, formed within the heel carrier plane; and

a threaded insert inserted into each heel carrier cavity.

10. The footwear of claim 9, further comprising:

a plurality of heel carrier attachment points, attached to the heel carrier;

a screw, inserted through a heel carrier attachment points into a heel carrier cavity.

11. The footwear of claim 10, further comprising: a Rail system, inserted into the rail system attachment cavity and further comprising a plurality of equally spaced rail system cavities.

12. The footwear of claim 11, further comprising:

a clip, connected to the outer sole and the rail system; wherein the clip further comprises:

a clip tail, joined to a clip round which terminates in a plurality of clip teethe;

clip ribs, attached to the clip round and configured to reinforce the clip.

13. The footwear of claim 12, further comprising:

a clip round axis, orthogonal to the clip round;

a clip tail axis, parallel to the clip tail;

a clip angle, measured counterclockwise from the clip round axis to the clip tail axis;

wherein the clip angle θ is at least 60 degrees but no more than 120 degrees.

13. The footwear of claim 1,

wherein the heel carrier further comprises a heel carrier bolt cavity attached to a heel carrier button pin housing with a bolt tube;

a heel carrier bolt further comprises a bolt central portion attached to a bolt spring portion and a bolt shaft;

a bolt spring slid around a bolt shaft;

a button pin, further comprising a central housing with a bolt entry port attached to a button pin shelf;

a button pin cavity area, attached to a button;

wherein pushing the button moves the button pin that pushes the bolt shaft and releases bolt spring.

14. The footwear of claim 13,

wherein the heel carrier further comprises heel carrier spring pin cavities which allow a heel carrier spring pin to pass through the heel carrier;

a heel carrier arm connected to a heel carrier dove tail;

heel carrier arm teeth, attached to the heel carrier arm and contacting a high heel dove tail shelf;

wherein the heel carrier arm teeth hold back the high heel from falling away from the heel carrier.

* * * * *