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(54) **GOLF SHOE MESH UPPER WITH A MOISTURE RESISTANT GUARD**

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(57) **ABSTRACT**

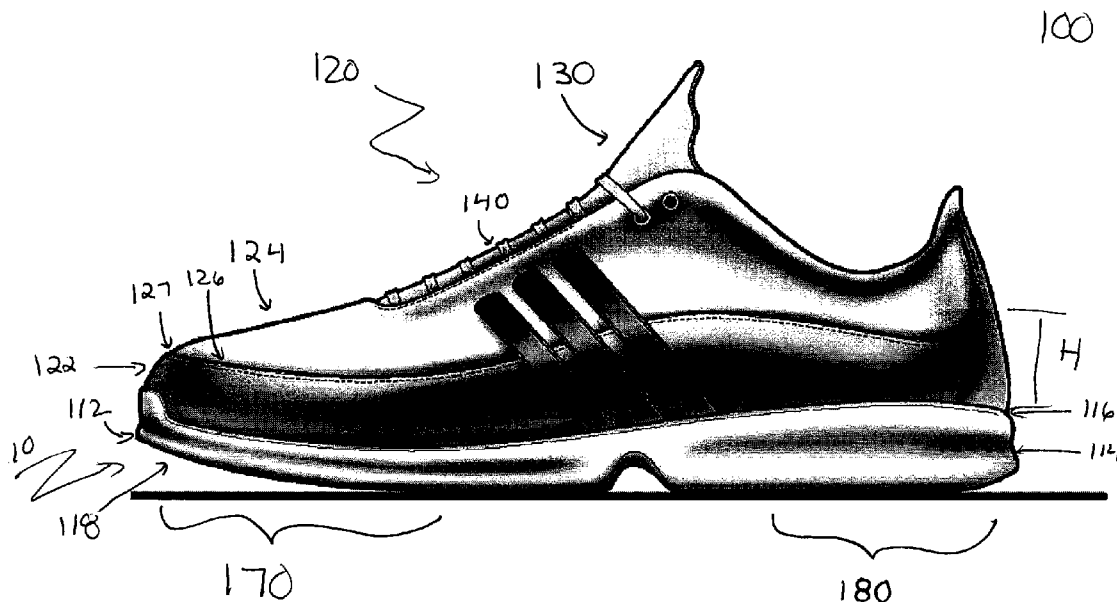
An article of footwear including a sole having a ground engaging surface; an upper having a toe region, heel region and a vamp portion. The upper has a first layer which is water impermeable and a second layer which is vapor and air permeable. The first layer extends in an upward direction from the featherline of the sole to a height on the upper which is at least 1.5 inches above the ground engaging surface of the sole and is attached to the second layer at height. The height at which the first layer extends and is attached to the second layer can vary along the upper in a toe-to-heel direction.

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Related U.S. Application Data

(60) Provisional application No. 60/986,838, filed on Nov. 9, 2007.



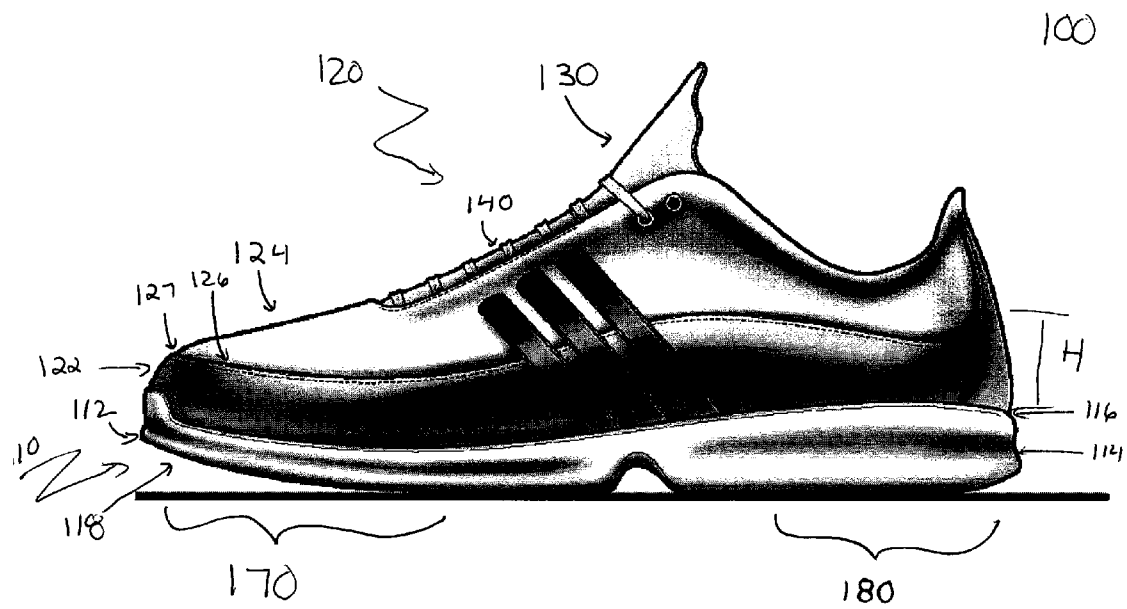


Fig 1



Fig 2

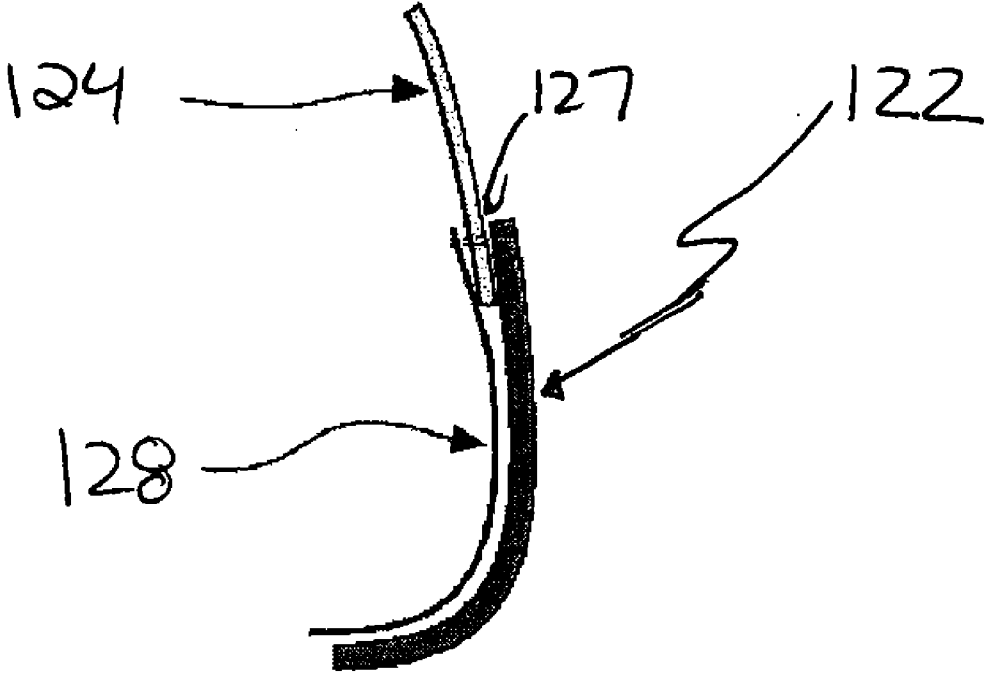


Fig 3

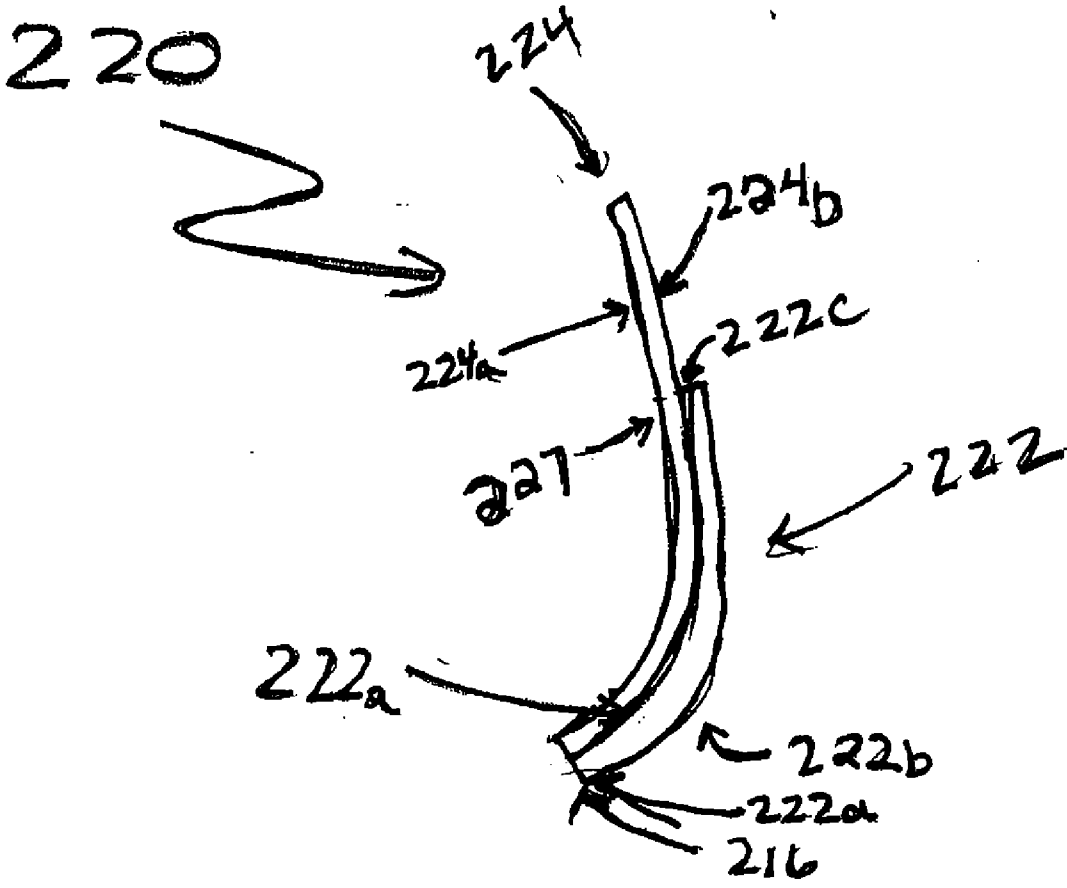


FIG. 4

GOLF SHOE MESH UPPER WITH A MOISTURE RESISTANT GUARD

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims benefit of U.S. Application No. 60/986,838, filed Nov. 9, 2007, which is hereby incorporated by reference in its entirety.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention is related to footwear and more particularly an article of athletic-type footwear for golf having an upper which is waterproof in certain regions and breathable in others.

[0004] 2. Background Art

[0005] The need for providing an article of footwear that is moisture-proof while retaining breathability is well known in the field of sports. Particularly in golf, there is a need for a lightweight breathable shoe that also provides protection from mud and water.

[0006] Traditionally golf shoes are constructed from leather. Today, the vast majority of golf shoes are made from waterproof leather. However, there has been a shift away from traditional leather golf shoes to more athletic-type shoes. The athletic-type shoe has allowed for lightweight golf shoes.

[0007] An important characteristic of golf shoes is to resist or prevent the foot of the golfer from being exposed to moisture. Having a waterproof or water resistant shoe is extremely important for golfers since it protects the wearer from the elements, such as wet grass and mud. Many golf shoes are made to be entirely waterproof or water resistant. While such shoes prevent moisture from entering the shoe, they also keep heat and moisture in the shoe. Thus many shoes designed to prevent moisture from entering the footwear do not properly breathe and therefore may cause discomfort due to heat.

[0008] In addition waterproof shoes are expensive to manufacture. The material for waterproof shoes can be more expensive and generally, there are increased production costs to ensure water-tightness along the seams of where the waterproof material is attached to the footwear.

[0009] In addition, sometimes moisture management and breathability are at odds. Waterproof shoes are often made of a laminate which is not air permeable, thus making the shoe uncomfortable to the wearer.

[0010] Conventionally, a waterproof shoe is made by sewing a liner made of a waterproof material to an additional inner liner. Typically, the waterproof material is made into a sock-like structure and is disposed towards the interior of the article of footwear. One example is shown in U.S. Pat. No. 7,159,335 to Chen.

[0011] However, in sports such as golf, the footwear is generally not completely immersed in water, when used under fair weather conditions, but only exposed on a lower portion such that it is not necessary for the entire upper to be made from waterproof or liquid impermeable material.

BRIEF SUMMARY OF THE INVENTION

[0012] The present invention provides a mesh upper for an article of footwear with a strategically positioned protective outer layer for optimized breathability and moisture resistance.

[0013] Presented herein is an article of footwear having a sole and an upper wherein the upper has a first portion extending from the juncture of the sole and the upper (the featherline) to a midline of the upper and a second portion extending from the midline to the vamp portion of the upper. Alternatively, the first portion may be extended above the midline in the toe region and/or heel region.

[0014] The first portion is formed from a hydrophobic material or a material which resists or eliminates the penetration of moisture through the first portion. The second portion is formed of a vapor and air permeable material.

[0015] In accordance with another aspect of the invention, the article of footwear has a sole and an upper with a first layer and a second layer. The first layer extends in an upward direction from the featherline of the sole to a point that is 20% to 70% of the height of the upper. The second layer is attached to the first layer and extends upwards from the place of attachment with the first layer to a vamp or tongue portion. Alternatively, the second layer may extend from the sole to the vamp or tongue portion.

[0016] The first layer is formed from a hydrophobic material or a material which prevents or inhibits moisture from passing there through and the second layer is made from an air permeable material.

[0017] In accordance with another aspect of the invention, the article of footwear has a sole with a ground engaging surface and an upper with an inner layer and an outer layer, where the outer layer is attached to an external surface of the inner layer. The outer layer is attached to the external surface of the inner layer at a height that is at least about 1.5 inches above the ground engaging surface.

[0018] The inner layer is made from an air permeable material and the outer layer is formed from a hydrophobic material or a material which prevents or inhibits moisture from passing there through to the inner layer.

[0019] Further embodiments, features, and advantages of the present invention, as well as the structure and operation of the various embodiments of the present invention, are described in detail below with reference to the accompanying drawings.

[0020] It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory only, and are not restrictive of the invention as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS/FIGURES

[0021] The accompanying figures, which are incorporated herein and form part of the specification, illustrate an athletic shoe. Together with the description, the figures further serve to explain the principles of the athletic shoe described herein and thereby enable a person skilled in the pertinent art to make and use the athletic shoe.

[0022] FIG. 1 is a side-view of an article of footwear of the present invention.

[0023] FIG. 2 is an exploded side-view of an article of footwear of FIG. 1.

[0024] FIG. 3 is a partial cross-sectional view of an upper of FIG. 1.

[0025] FIG. 4 is an alternative partial cross-sectional view of an upper of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0026] Preferred embodiments of an athletic shoe are described below with reference to the figures where like reference numbers indicate identical or functionally similar elements. Also in the figures, the left most digit of each reference number corresponds to the figure in which the reference number is used. While specific configurations and arrangements are discussed, it should be understood that this is done for illustrative purposes only. A person skilled in the relevant art will recognize that other configurations and arrangements can be used without departing from the spirit and scope of the appended claims.

[0027] FIG. 1 shows an athletic shoe 100. Shoe 100 is comprised of sole 110 and an upper 120. An insole or removable sockliner is typically included within the shoe, but is not shown in the figures. The shoe is completed with a tongue portion 130 and shoelaces 140. Tongue portion 130 and shoelaces 140, are optional as would be known to one of skill in the art. For example, it is possible to use any known closure system for a shoe without departing from the invention.

[0028] Sole 110 is generally comprised of outsole 112 and midsole 114. Outsole 112 is typically made of a wear-resistant rubber material. In other embodiments, as would be appreciated by one of ordinary skill in the art, the ground engaging surface 118 of the sole can include hard cleats made of rubber, removable metal cleats, soft removable cleats or any other suitable ground engaging element when shoe 100 is used as a golf shoe.

[0029] Midsole 114 is typically made of an ethylene-vinyl acetate (EVA) material or polyurethane foam. Alternatively, midsole 114 may be made of a durable foam such that shoe 100 may be made without an outsole.

[0030] The soles of shoes, including golf shoes, have developed significantly in the past decade. With the use of mechanical inserts, air bags, and other exotic materials such as gels and honeycombs, it is sometimes difficult to specifically identify and label specific portions of the shoe. For purposes of this disclosure, a person having ordinary skill in the art will appreciate that the sole, while typically having a foam midsole, may have other components that make up the sole.

[0031] Upper 120, as shown in FIGS. 1 and 2, includes first portion 122 and a second portion 124. First portion 122 extends from at least the featherline 116 of sole 110 in an upward direction to a midline 126 and wraps around shoe 100 from medial side 150 to lateral side 160. Midline or point 126 is located above featherline 116 at a height H. First portion 122 is attached to second portion 124 at midline 126 creating seam 127. Alternatively, lower portion 122 can be extended above midline 126 in toe or forefoot region 170 and/or extended above midline 126 in a heel or rearfoot region 180.

[0032] Typically, the height H must be far enough above the ground so that, as a practical matter, the wearer will not be subject to significant moisture while playing golf. Generally, the first portion 122 will extend from sole 110 to a point between 20% and 70% the height of the upper in toe region 170. While the height and moisture of the rough on golf courses vary, the top of the first portion should extend at least about 1.5 inches above the ground engaging surface of the sole when the shoe is resting on a flat surface.

[0033] Further, height H in which first portion extends may vary along upper 120 in a toe-to-heel direction. As such, seam 127 between the first lower portion and the remaining second portion need not be a straight line. It may be contoured for ornamental reasons as well as to avoid interference with the natural gait of the wearer. Accordingly, first portion 120 may extend to a height H in toe region 170 that is greater than a height H in heel region 180 or vice-versa.

[0034] First portion 122 is preferably formed of a synthetic material that is liquid impermeable or hydrophobic to protect the wearer's foot from exposure to water and other liquids. In the case that first portion 122 is made from a synthetic material, the material may be treated to make the material waterproof. For example, the first portion or layer may be formed of thermoplastic polyurethane. Alternatively, the first portion may be made from polyurethane microfiber backed synthetic or any other suitable materials known in the art that is water repellent, water resistant or water proof.

[0035] First portion 122 may be pre-formed or premanufactured and then attached to sole 110. First portion 122 is attached to sole 110 at featherline 116. First portion 122 can be attached by high frequency welding, direct injection, cementing, stitching or attached to midsole 114 by any other suitable attachment process known to the art. In alternative embodiments, first portion or layer 122 may be attached directly to an outsole if no midsole is present.

[0036] The seam created at featherline 116 may be treated with a seam sealant to make watertight. However, it may not be required to treat the seam at featherline 116 since the attachment process can be one that guarantees that there is a waterlock between first portion 122 and sole 110 at featherline 116.

[0037] FIG. 3 shows a partial cross sectional view of upper 120. First portion 122 is typically sewn to second portion 124 along seam 127, which is generally located at height H to which first portion 122 extends. Alternatively, the first portion or layer may be attached via a radio frequency (RF) welding process or any other suitable attachment method known to the art.

[0038] Second portion 124 extends from seam 127 to tongue portion 130 to complete formation of upper 120 to enclose the wearer's foot. As can be appreciated by one skilled in the art, upper 120 can alternatively be made without tongue portion 130. In this embodiment, second portion 124 would extend from seam 127 to a vamp region to enclose the wearer's foot.

[0039] Second portion 124 is formed of a vapor and air permeable material to allow for breathability to increase comfort for the wearer. Preferably, second portion 124 is formed of a woven mesh material. The preferred mesh size will be optimized for breathability. Alternatively, second portion 124 may be made from a breathable membrane, perforated leathers, synthetics, textiles or any other suitable material known to the art that allows for breathability.

[0040] As shown in FIG. 3, lining 128 may be used. Lining 128 is typically attached to second portion 124 on inner surface 122a at seam 127. Lining 128 may be sewn on, RF welded, or attached to second portion 124 by any other suitable attachment process known to the art.

[0041] Lining 128 may be made from an anti-wicking material or any other suitable material that is lightweight, comfortable and breathable. Also, lining 128 may be made from any conventional lining material known in the art. The material for lining 128 also be chosen to optimize other properties such as abrasion resistance, tear strength, or stitch tear

resistance, for example. In alternative embodiments, lining 128 may not be used as would be known to one of ordinary skill in the art.

[0042] In accordance with another aspect of the invention, upper 120 can have a first layer and a second layer instead of first portion 122 and second portion 124. In this embodiment, the first layer is akin to first portion 122 and extends from sole 110 to a point at least 1.5 inches above ground engaging surface 118 of sole 110, where it is attached to the second layer along seam 127. The second layer, instead of extending from seam 127, spans the full height of upper 120 extending from sole 110 to tongue portion 130 or a vamp region.

[0043] FIG. 4 shows an alternative partial cross-sectional view of upper 220 in accordance with an alternative embodiment of the present invention. Upper 220 has outer layer 222 and inner layer 224.

[0044] In the embodiment shown in FIG. 2, inner layer 224 extends from the featherline 216 of a sole (not shown) to a tongue or vamp portion (not shown) to encompass the wearer's foot like a conventional upper and outer layer 222 is disposed on a lower portion of the inner layer 224 of upper 220.

[0045] Inner layer 224 has an inner surface 224a and an outer surface 224b. Inner layer 224 is attached to the midsole (not shown) at featherline 216. In an alternative embodiment, inner layer 224 may be attached directly to the outsole if no midsole is present as would be known to one of ordinary skill in the art.

[0046] Inner layer 224 is formed from a vapor and air permeable material. In the preferred embodiment, inner layer 224 is a woven mesh material. Alternatively, inner layer 224 may be made from any other suitable material known to the art that provides breathability.

[0047] Outer layer 222 is attached to sole 210 (not shown) along lower edge 224d at featherline 216 and extends in an upward direction to seam 227. In this embodiment outer layer 222 is preformed and then attached to sole 210. Outer layer 222 is attached to sole 210 via a cementing procedure. Alternatively, outer layer 222 may be attached to sole 210 through a lamination process or any other suitable attachment process known to one of ordinary skill in the art that would provide for a water-lock at seam 227.

[0048] Seam 227 is located at a height H. Height H should be at least 1.5" above the ground engaging surface of a sole (not shown). Seam 227 need not be at a constant height along upper 220 in a toe-to-heel direction. Seam 227 may vary in height along upper 220 in a toe-to-heel direction so that inner layer 224 is not subject to significant moisture.

[0049] Outer layer 222 has an inner surface 222a, an outer surface 222b, upper edge 222c and a lower edge 222d. Outer layer 222 is disposed such that its inner surface 222a is adjacent to outer surface 224b of inner layer 224 and is attached to inner layer 224 along upper edge 222c at seam 227.

[0050] Outer layer 222 may be sewn on to inner layer 224 or attached by the use of any other suitable attachment means known in the art. The seam between outer layer 222 and inner layer 224 may be treated with a sealant to make water-tight. However, it may not be necessary to treat seam 227 to make a water-lock if the chosen attachment process makes a water-tight bond at seam 227.

[0051] Outer layer 222 is formed of a synthetic hydrophobic material or a liquid impermeable material, such as thermoplastic polyurethane. Alternatively, outer layer 222 may be

made of polyurethane, non-woven microfibers or any other suitable material that would prevent liquid from penetrating the upper that would be known to one skilled in the art.

[0052] In accordance with another aspect of the invention, as can be appreciated by one skilled in the art, lining 128 may be used. Lining 128 is attached to the inner surface 224a of the inner layer 224. Lining may be sewn on, cemented, or attached using any other suitable means known to one skilled in the art.

[0053] While various embodiments of the present invention have been described above, it should be understood that they have been presented by way of example only, and not limitation. For example, the material forming the first or lower portion of the upper may extend completely under the foot. This single piece of water proof or hydrophobic material may extend from approximately the middle of the upper on the medial side of the footwear, under the foot, and up to the middle of the upper on the lateral side of the footwear. It will be apparent to persons skilled in the relevant art that various changes in form and detail can be made therein without departing from the spirit and scope of the present invention. Thus, the breadth and scope of the present invention should not be limited by any of the above-described exemplary embodiments, but should be defined only in accordance with the following claims and their equivalents. All patents and publications discussed herein are incorporated in their entirety by reference thereto.

What is claimed is:

1. An article of footwear, comprising:

a sole; and

an upper having a toe region and heel region;

wherein said upper has a first portion which is water impermeable and a second portion which is air permeable;

wherein said first portion extends from said sole to a point between 20% and 70% of the height of said upper in said toe region.

2. The article of footwear of claim 1, wherein said first portion extends from said sole to a point between 20% and 70% the height of said upper in said heel region.

3. The article of footwear of claim 1, wherein said first portion extends approximately 50% of the height of said upper in said toe region.

4. The article of footwear of claim 1, wherein said first portion extends approximately 50% of the height of said upper in said heel region.

5. The article of footwear of claim 1, wherein said first portion comprises thermoplastic polyurethane.

6. The article of footwear of claim 1, wherein said second portion comprises a mesh material.

7. The article of footwear of claim 1 wherein the first region comprises a material which extends from a medial side of the upper, under the foot, to a lateral side of the upper.

8. An article of footwear, comprising:

a sole having a ground engaging surface;

an upper having a toe region, heel region and a vamp portion;

wherein said upper has a first layer which is water impermeable and a second layer which is vapor and air permeable;

wherein said first layer extends from said sole to a height on said upper which is at least 1.5 inches above said ground engaging surface of said sole; and

wherein said first layer is attached to said second layer at said height.

9. The article of footwear of claim 8, wherein said second layer extends from said height on said upper to said vamp portion.

10. The article of footwear of claim 8, wherein said second layer extends from said sole to said vamp portion.

11. The article of footwear of claim 8, wherein said height in which said first layer extends varies along said upper from said toe region to said heel region.

12. The article of footwear of claim 11, wherein said height in which said first layer extends along said upper is greater in said toe region than in said heel region.

13. The article of footwear of claim 8, wherein said first layer is thermoplastic polyurethane.

14. The article of footwear of claim 8, wherein said second layer is a mesh material.

15. An article of footwear, comprising:
a sole having a ground engaging surface;
an upper having a vamp region;
wherein said upper has an inner layer which is air permeable and an outer layer which is water impermeable;

wherein said inner layer has an internal surface and an external surface; and

wherein said outer layer extends upward from said sole to a point on said upper that is at 20% to 70% of the height from said ground engaging surface to said vamp region and is attached to said external surface of said inner layer.

16. The article of footwear of claim 14, wherein said outer layer extends approximately 50% of the height from said ground engaging surface to said vamp region.

17. The article of footwear of claim 14, further comprising: a lining, wherein said lining is attached to said internal surface of said inner layer.

18. The article of footwear of claim 14, wherein said outer layer of said upper is thermoplastic polyurethane.

19. The article of footwear of claim 14, wherein said inner layer of said upper is a mesh material.

20. The article of footwear of claim 14, wherein said ground engaging surface has at least one cleat.

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