US 20110314701A1

(19) **United States**

(12) **Patent Application Publication**

Rod, III et al.

(10) **Pub. No.: US 2011/0314701 A1**

(43) **Pub. Date: Dec. 29, 2011**

(54) **AERODYNAMIC BICYCLE SHOE COMPONENTS**

(75) Inventors: **Ronald F. Rod, III**, Boulder, CO (US); **Robert D. Ketchall, III**, Ft. Collins, CO (US)

(73) Assignee: **DASHAMERICA, INC. D/B/A PEARL IZUMI, INC.**, Louisville, CO (US)

(21) Appl. No.: **13/107,695**

(22) Filed: **May 13, 2011**

Related U.S. Application Data

(60) Provisional application No. 61/345,102, filed on May 15, 2010.

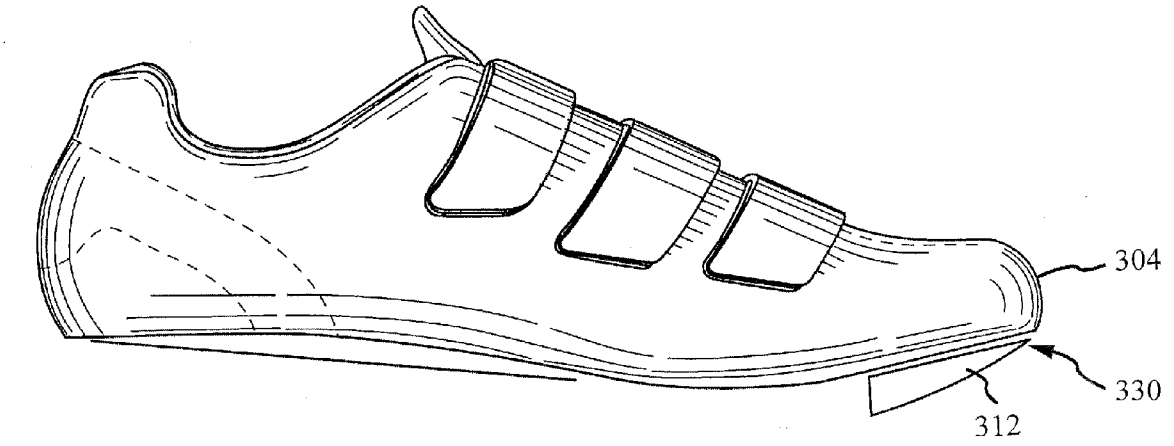
Publication Classification

(51) **Int. Cl.**
A43B 5/14 (2006.01)

(52) **U.S. Cl.** **36/134**

(57) **ABSTRACT**

The invention relates to athletic shoe elements that add improved aerodynamic efficiency to an athletic shoe, particularly bicycling shoes. These elements perform as front and/or rear projections below the surface of the sole of the athletic shoe to reduce drag forces on the shoe without impeding the athletic functionality of a shoe as used in sports performance.



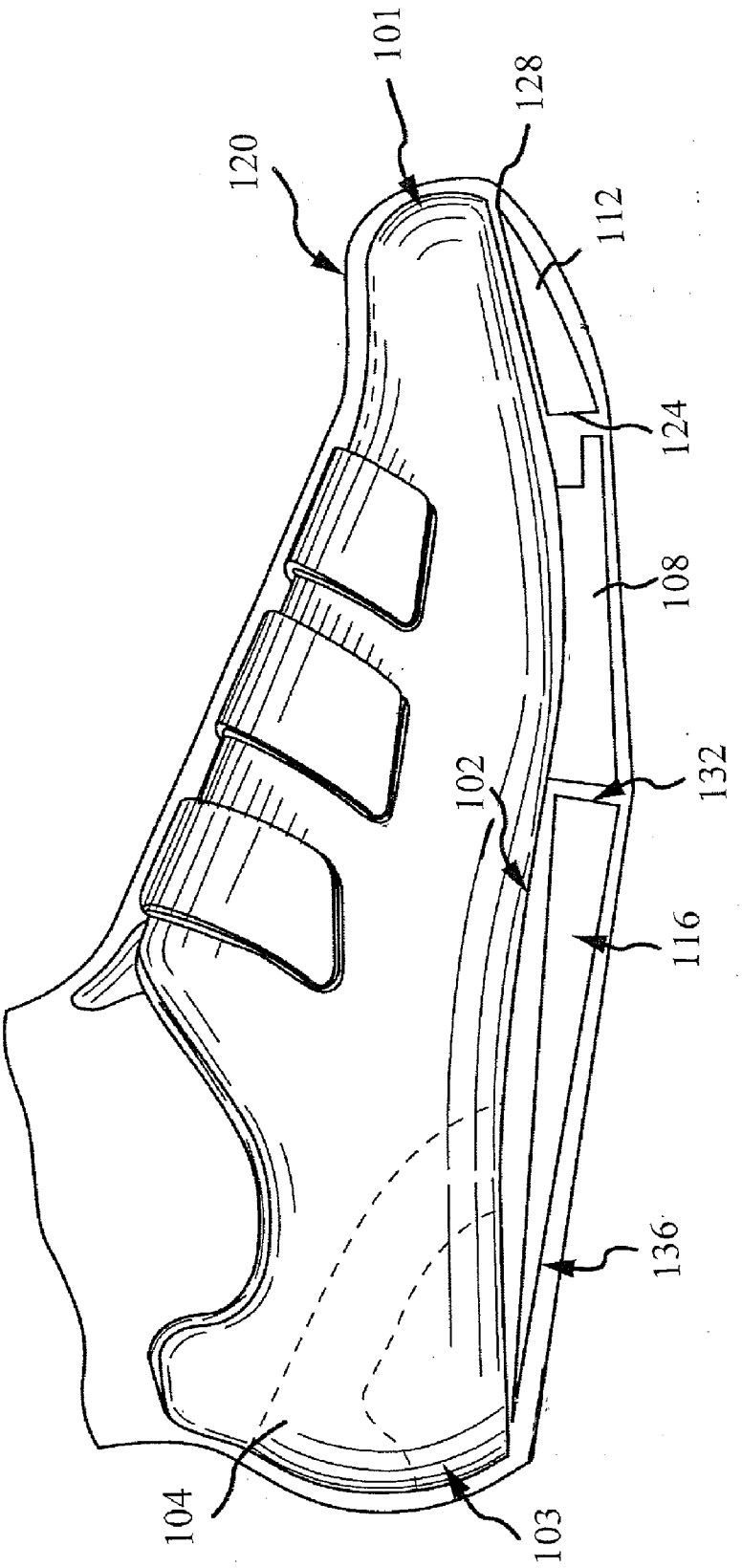


FIG.1

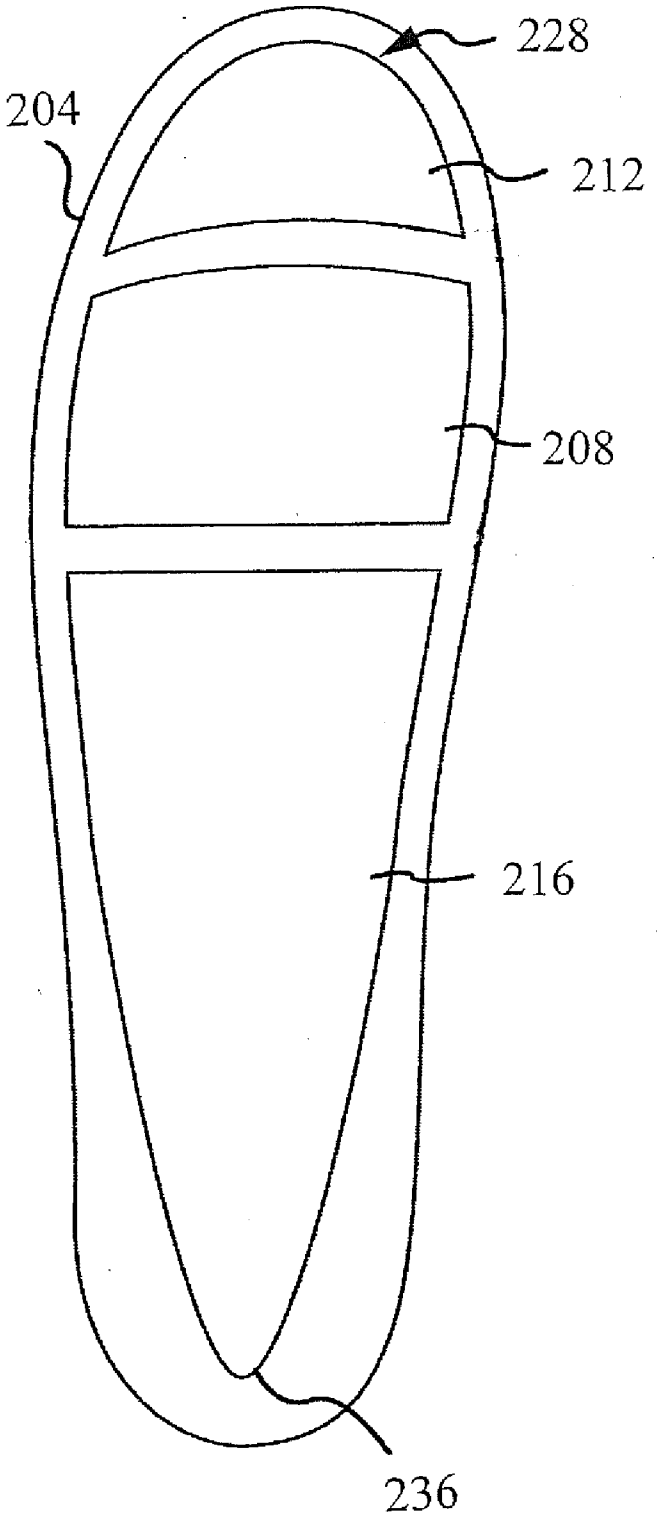


FIG.2

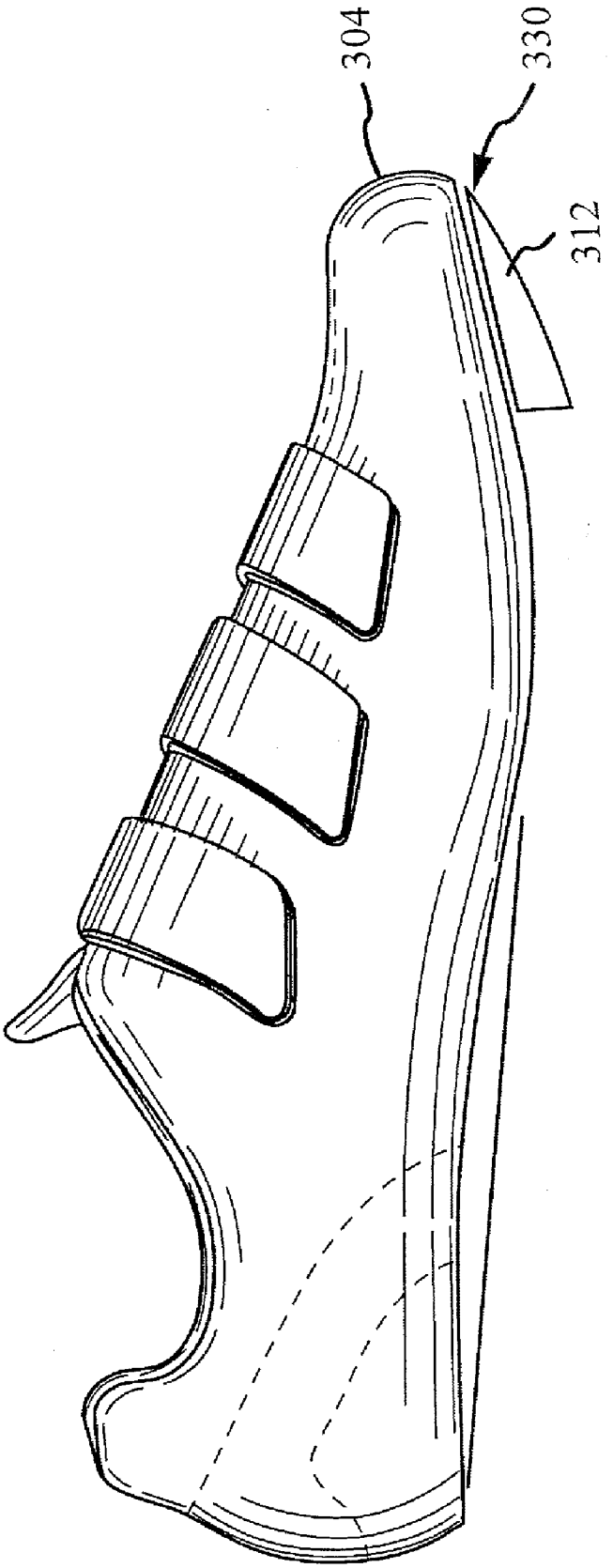


FIG.3

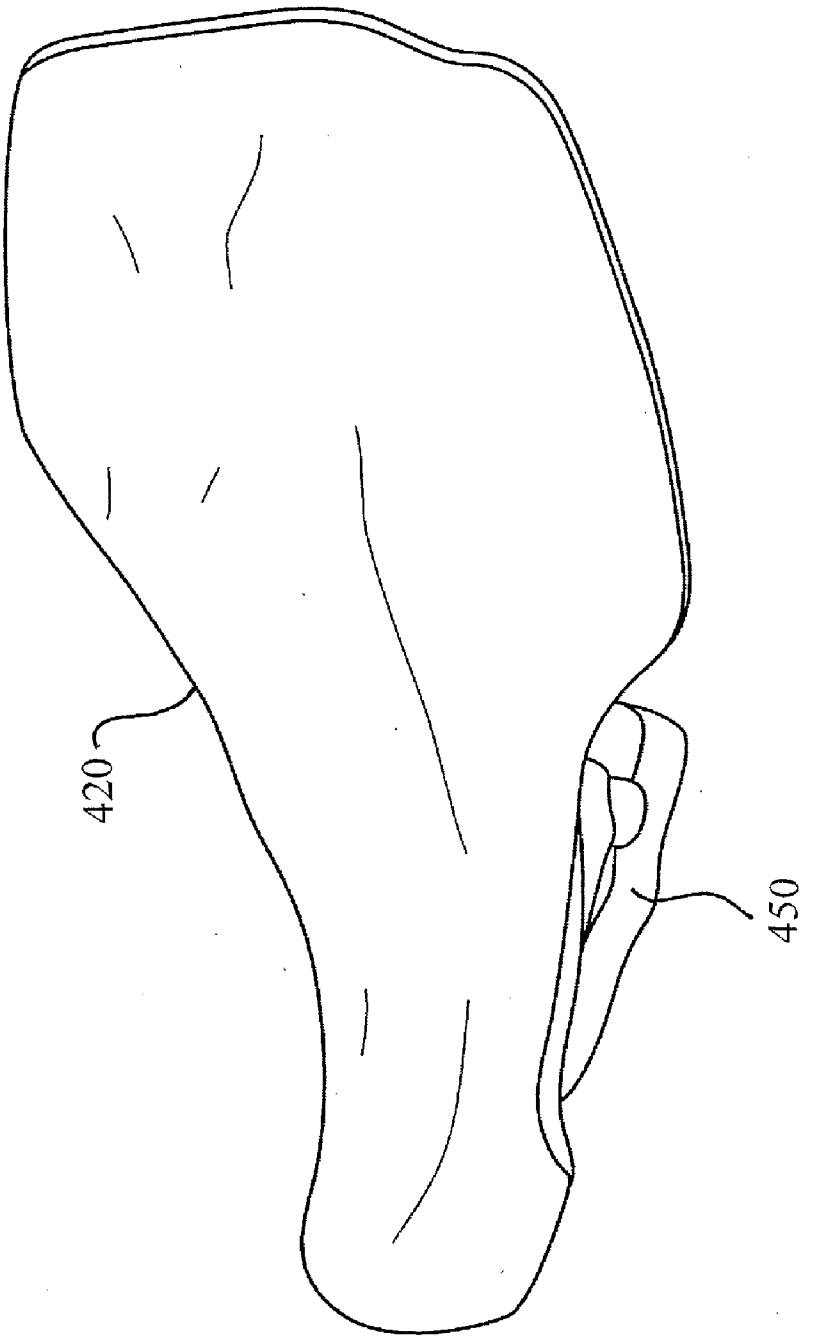


FIG.4

AERODYNAMIC BICYCLE SHOE COMPONENTS

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims priority under 35 U.S.C. §119(e) to U.S. Provisional Patent Application Ser. No. 61/345,102 filed May 15, 2010, which is incorporated herein in its entirety by reference.

TECHNICAL FIELD

[0002] The invention relates to athletic clothes and shoes which improve aerodynamic efficiency of the athlete wearing these garments.

BACKGROUND OF INVENTION

[0003] In many speed-based individual athletic events, such as bicycling, speed skating, and running, the difference between achieving first or second place is typically a fraction of a second. Individually-controllable factors, such as form and athletic power, are often the focus in the training for reducing performance time in such events. Drag due to the resistance of the movement of an athlete through a fluid such as the air or water is also a contributing factor in increasing performance time.

[0004] A body moving through a fluid experiences a drag force, which may be divided into two components: frictional drag and pressure drag. Frictional drag is due to the friction between the fluid and the surfaces over which the fluid is flowing. The smoother the surface, the less frictional drag is generated by moving through the fluid.

[0005] Pressure or "form" drag derives from the eddying motions that are created by the motion of the body through the fluid, such as the formation of a region of separated flow or "wake" behind the body. The pressure in the wake is typically slightly less than the pressure in front of the body, and in extreme cases, is significantly less than the pressure in front of the body. To continue moving forward, the athlete must provide additional force to overcome the imbalance of the pressure forces in front of, and behind, the athlete.

[0006] The drag force on an athlete competing at lower speeds is generally dominated by the frictional component. Improvements in performance times can therefore be obtained by smoothing the surface of an athlete, reducing the frictional component of the drag force. For example, swimmers and bicyclists shave the hair from legs, arms, and head in order to smooth the surface of the exposed skin. This helps to reduce the friction between the athlete and the fluid (air or water) in which the athlete competes thereby reducing performance time.

[0007] One location where this drag force is apparent is at the foot of the athlete. Bicycling gear, including shoes and pedals create drag between the athlete and the air due to the different equipment shapes, such as the straps or shoelaces, the tongue on the top of the shoe, and the cleats and pedals on the bottom of the shoe, all of which may contribute to frictional and pressure drag. Thus, there is a desire for aerodynamic bicycle shoes and related components that reduce the drag on the lower extremities of the bicyclist.

[0008] Furthermore, a variety of shoe covers have been manufactured over the years. These shoe covers generally fall into two categories: overshoes and gaiters. An example of an overshoe is rubber boots of the elastic bootie or buckle variety. An overshoe completely covers the sole portion of a shoe and a substantial portion of the outer shoe. The overshoe is provided with a lower sole surface which, when in use, provides the gripping surface between the wearer and the ground. Conversely, gaiters typically cover the ankles and a portion of the mid-sole of wearer's shoes extending upwards along the wearer's calf. Gaiters frequently have a strap which extends under the sole of the shoe forward of the heel in order to keep the gaiter from creeping up the wearer's leg. Decorative gaiters are frequently used as part of a decorative marching band uniform. Functional gaiters are used in outdoor winter sports such as cross-country skiing or snowshoeing where the gaiter is used to cover the lace portion of the shoe and a substantial portion of the wearer's sock and lower leg. None of these traditional shoe covers contain aerodynamic components. Thus, there is a need for a shoe cover used with aerodynamic components that reduce drag.

SUMMARY

[0009] The present invention provides athletic clothing and athletic shoes that significantly reduce the drag forces, and particularly the pressure or "form" drag on an athlete wearing these accessories, thereby improving the performance time and efficiency of the athlete through enhanced aerodynamics. Although bicycling is referred to throughout the specification, it is understood that aspects of this invention may be used for other sports, such as speed skating and skiing.

[0010] The invention provides projections located on the sole of a shoe that are formed and shaped such that air passing over the bottom of the shoe, particularly when a bicyclist has engaged the cleat of a bicycle shoe in a bicycle pedal while riding a bicycle, passes smoothly over the cleat and the pedal, thereby reducing the friction that is created by air passing over the cleat and pedal below the bicyclist's shoe in the absence of such projections. This reduction in friction can significantly reduce the performance time of an athlete competing in a timed bicycle competition.

[0011] In one aspect of the invention, these projections may be mated with a bicycle shoe. In other aspects, the projections may be mated to a shoe cover that holds the projections in the proper orientation under the sole of a shoe to maximize the aerodynamic benefits of the projections positioned on a shoe. These shoe covers are preferably of a simple construction that can be readily manufactured at low cost, but light in weight, and may be folded as desired and therefore readily carried by a cyclist. They can preferably be quickly and easily slipped on or off and is therefore convenient for use by cyclists.

[0012] Therefore, one embodiment is an aerodynamic shoe including a sole and a cleat adapted to connect to a bicycle pedal attached to the sole, and at least one projection that attaches to the sole adjacent to the cleat. The projection may be a front projection located between a toe of the shoe and the cleat and/or a rear projection located between the cleat and a heel of the shoe. The thickness of the projections may vary across the length or width of the projections. For example, the front projection may vary in thickness such that the thickness at one side of the front projection is less than a thickness at an opposing side of the front projection. The shoe may have both a front projection located between a toe of the shoe and the cleat and a rear projection located between the cleat and a heel of the shoe.

[0013] Another embodiment is an aerodynamic shoe cover that includes at least one of a front projection and a rear projection, wherein the front and rear projections provide an

aerodynamic shape to an athletic shoe and wherein the front projection locates between a toe of the shoe and the cleat and the rear projection locates between the cleat and a heel of the shoe, when the shoe cover is covering an athletic shoe during a performance of an athletic event. In this embodiment, the at least one of the front projection and the rear projection may vary in thickness such that the thickness at a side of the projection is less than a thickness at an opposing side of the projection. The shoe cover may be composed of materials such as lycra, nylon, vinyl, plastics, polymers, leather, latex or the like, or combinations thereof and the materials may further contain designs or advertising materials. The shoe cover may also contain different opening or attachment methods to allow for easier placement or removal of the shoe cover about the foot, such as a zipper opening. The shoe cover may also contain a ribbed component that provides a wind break as air moves over the surface of the shoe cover during an athletic event.

[0014] As used herein, the term "a" or "an" entity refers to one or more of that entity. As such, the terms "a" (or "an"), "one or more" and "at least one" can be used interchangeably herein. It is also to be noted that the terms "comprising", "including", and "having" can be used interchangeably.

[0015] The terms "at least one", "one or more", and "and/or" are open-ended expressions that are both conjunctive and disjunctive in operation. For example, each of the expressions "at least one of A, B and C", "at least one of A, B, or C", "one or more of A, B, and C", "one or more of A, B, or C" and "A, B, and/or C" means A alone, B alone, C alone, A and B together, A and C together, B and C together, or A, B and C together.

BRIEF DESCRIPTION OF DRAWINGS

[0016] FIG. **1** illustrates a side view of specific embodiments of projections of the present invention positioned below a shoe.

[0017] FIG. **2** illustrates a bottom view of a shoe with projections of the present invention positioned under the shoe.

[0018] FIG. **3** illustrates a side view of another specific embodiment of the present invention.

[0019] FIG. **4** illustrates a side view of a specific embodiment of the present invention that includes a shoe cover.

DESCRIPTION OF EMBODIMENTS

[0020] The present invention is drawn to bicycling shoes and related clothing that significantly reduce the drag forces, and particularly the pressure or "form" drag on an athlete wearing these accessories, thereby improving the performance time and efficiency of the athlete through enhanced aerodynamics. Though bicycling is referred to throughout the specification, it is understood that aspects of this invention may be used for other speed sports, such as speed skating and skiing.

[0021] One aspect of the present invention includes an aerodynamic bicycling shoe, which may be either or both left and right forms of a bicycling shoe and includes shoes designed to fit a man, a woman, or both. The bicycling shoes of the invention may have a shoe size according to any international shoe size designation.

[0022] A bicycling shoe may contain a clip attachment and may be attached to a pedal attachment clip or "cleat" located on the sole of the shoe. The cleat may be any cleat that engages with a corresponding bicycle pedal when the bicyclist is riding a bicycle.

[0023] An aerodynamic bicycle shoe of the invention is illustrated in FIG. **1**, wherein a front projection **112** and a rear projection **116** extend below the sole **102** of the bicycling shoe **104** to a height that is approximately the same as the height of the cleat **108**. In one preferred embodiment, the front projection **112** and the rear projection **116** are approximately the same as the combined height of the cleat **108** and a corresponding bicycle pedal, when the cleat **108** is engaged in a bicycle pedal. In another embodiment, the height of the front projection and the rear projection is approximately the same height near the edges adjacent to the cleat when it is engaged in the pedal.

[0024] The height of these projections may vary and preferably vary gradually such that the thickness or height of the front projection **112** near the toe edge of the shoe **101** is thinner than the thickness of the front projection **112** near the cleat **108**. Preferably, the thickness of the front projection **112** varies such that the thickness near the edge **124** adjacent the cleat **108** is approximately the thickness of the cleat **108** engaged with a pedal, and tapers such that the front edge **128** of the projection **112** adjacent the toe **101** of the shoe **104** is less than about 2 cm in thickness and preferably less than about 0.5 cm in thickness. Alternatively, the thickness of the front projection at the edge adjacent the cleat may be approximately the same thickness as the front edge of the projection, such that the thickness of the projection does not taper over the length or width of the front projection. That is, it may be possible that no gradient exists and the thickness of the front projection is substantially uniform throughout the front projection.

[0025] The rear projection **116** is configured to create an aerodynamic plane when the shoe **104** is attached to a pedal through the cleat **108**. The general shape of the rear projection **116** is such that the thickness of the edge **132** adjacent the cleat **108** is approximately the thickness of the cleat **108** attached to the pedal. Preferably, the thickness of the rear projection **116** may also vary gradually such that the thickness or height of the rear projection **112** at the edge **132** near the cleat **108** is thicker than the thickness of the rear projection **136** near the heel **103** of the shoe **104**. Alternatively, the thickness of the rear projection at the edge of the projection adjacent the cleat may be approximately the same thickness as the rear projection near the heel of the shoe. In other words, it may be possible that no gradient exists and the thickness of the rear projection is substantially similar throughout the front projection.

[0026] The front projection and rear projections may be attached to the shoe by any convenient means known to those of skill in the art. As used throughout this disclosure, the term "attaching", "attach", or "attached", indicates either a permanent or temporary attachment and may include attachments such as welding, bonding, pressure, thermoprocessing, adhesives, sealants, tacks, screws, clips, zippers and the like. A filler may be used to reduce empty space between the shoe and the front projection and/or rear projection. The filer may be any flexible material and may be permanent or temporary. The term also includes a shoe in which a front projection, a rear projection, or both a front projection and a rear projection are formed as a single piece of material with the sole of the shoe, such that the shoe with either or both the front projection and the rear projection comprises a single article of

manufacture without the need for temporary or permanent means of attachment. The front projection and the rear projection may also be made out of a single attachment piece which may attach to the shoe while allowing for the cleat to engage a pedal without interference from the single projection piece.

[0027] In some embodiments, the front projection or the rear projection may be absent. Thus, one embodiment of the invention includes a front projection attached to the shoe without a rear projection. Similarly, another embodiment of the invention includes a rear projection attached to the shoe, in the absence of a front projection. In a preferred embodiment, both the front projection, and the rear projection are present and attached to the shoe.

[0028] The front projection and/or the rear projection are preferably arranged on the bottom of the shoe, such that the projection(s) do not interfere with the engagement of a cleat with a corresponding pedal.

[0029] The front and rear projections of the invention can be made from any materials that will hold the aerodynamic shape when the bicyclist has engaged the cleat in a pedal. By way of non-limiting example, the material may be a soft material, such as foam, a flexible polymer, such as polyurethane, or combinations thereof. These materials may compress if the rider exerts a downward pressure on the projections, such as when the rider is walking with the projections on the shoes. When softer materials are used, they may substantially return to the shape of the projection, as originally formed, once the rider no longer exerts pressure on the projections. Alternatively, the material may be a rigid material, such as wood, a stiff polymer such as a polyimide, a composite material such as carbon fiber, a rigid foam, a metal, or combinations thereof. The projections may also be formed from a combination of soft and rigid materials to attain one or more projections having reduced weight but sufficient strength to maintain the aerodynamic shaped form of the projections when the bicyclist has engaged the cleat in a pedal. The projection(s) may be solid or they may be hollow or contain pockets or slits, as desired to attain one or more projection(s) having characteristics of weight and strength to maintain the aerodynamic shape of the invention when the bicyclist has engaged the cleat in a pedal.

[0030] The front projection **112** and rear projection **116** are typically flush at the interface with the sole **102** of the shoe **104**, but allow for any protrusions formed on the sole **102** of the shoe **104**. Furthermore, groves may be included in the shoe **104** and/or the front projection **112** and/or the rear projection **116** that allow the front projection **112** and/or the rear projection **116** to clip or lock onto the shoe **104**, thereby providing a temporary means of attaching the front or rear projection(s) to the shoe. Additionally or alternatively, the bottom front edge **140** and/or the bottom rear edge **144** may be substantially flat, so that the rider may walk in the shoe **104** with greater ease, while still providing an aerodynamically-enhanced surface on the bottom of the bicycling shoe. The bottom edges of the projections may also include groves or designs to aid the wearer when the wearer is walking on unstable surfaces, such as gravel or mud.

[0031] Another aspect of the present invention is a shoe cover incorporating the aerodynamic components described above for an athletic shoe. A shoe cover may be used as an alternative to, or in conjunction with, a bicycle shoe to incorporate aerodynamic components with a bicyclist's foot and/or pedals. The shoe cover extends under at least a portion of the athletic shoe sole, spanning the sole and side panels of the shoe without covering the cleat of the bicycle shoe. In one embodiment, the shoe cover is an elastic fabric material configured to fit snugly over a bicycle shoe, covering at least the mid-foot region of a shoe upper portion. In a specific embodiment, the shoe cover extends above and encircles the wearer's ankle. Preferably, a zipper is provided in the shoe cover material to form an opening that can be opened to enable the wearer to more easily place the shoe cover on the shoe or remove the shoe cover from the shoe, or to remove the shoe from the wearer's foot without entirely removing the shoe cover from the shoe. However, it is understood that any suitable means of closing or tightening the shoe cover over the shoe may be used. For example, the shoe cover may slip over the shoe or wrap around the shoe and connect to itself or the shoe using any feasible means, including but not limited to, hook and loop (VELCRO™), tape, pins, buttons or the like. Furthermore, the shoe cover may cover just the shoe, or it may end below the ankle or along the leg, or it may be incorporated into a full body suit or tights. Optionally, the shoe cover is composed of a sufficiently elastic material to allow the shoe cover to be positioned around the shoe or removed from the shoe without the need for a seam, zipper or other opening in the shoe cover. In the event a zipper or other closure means is included in the shoe cover, various orientations may be used, including a closure means extending along the longitudinal axis of the shoe from the ankle opening forward, or from the ankle opening rearward along an Achilles tendon seam, or along the instep side of the shoe cover. Alternatively, a closure means may be asymmetrically oriented relative to the longitudinal axis of the shoe in order to provide a smooth upper shoe panel uninterrupted by a seam. Alternatively, a closure means may be used and oriented such as to provide an additional effect on drag, such as by providing a rib component. Additionally rib components may be used throughout the shoe cover.

[0032] A specific embodiment of the shoe cover is shown in FIG. **1** wherein the shoe cover **120** is shown encircling the shoe **104** and the front projection **112** and rear projection **116**.

[0033] As noted above, the shoe covers of the invention are preferably composed, at least partially, of an elastic material. Fabric that has a bidirectional stretch characteristic, is highly durable, and is breathable, is preferably used. For example, the shoe covers may be composed of materials including, but not limited to, lycra, nylon, vinyl, plastics, polymers, leather, latex or the like, or combinations thereof. Other porous elastic fabrics having similar properties are likewise suitable for fabricating the present invention provided that the material has sufficient elasticity and durability for the particular athletic shoe application. Furthermore, the shoe cover is preferably composed of material(s) forming a smooth exterior to further reduce frictional drag force. The entire shoe cover is preferably formed by a single piece of pliable, flexible, molded material which may be natural or synthetic rubber that can be stretched sufficiently to be pulled over shoes that differ in size and shape for a snug fit. The shoe covers of the invention may be formed as one piece, or several pieces connected to each other through conventional means, including, but not limited to, sewing, heat bonding or welding, adhesive(s), zippers, hook and loop (VELCRO™) closures, and the like.

[0034] When a shoe cover of the invention is installed on an athletic shoe, the shoe cover provides a neat, aesthetic appearance. The material of the shoe cover is ideally suited for

displaying a design or team logo, which may be a sewn-on patch or a stencil-painted symbol identifying a team, sponsor or product. The shoe cover of the present invention enables an athletic team where the team members have shoes of a variety of different styles and manufacture to provide a uniform team look by covering up shoe brand logos that are mounted on individual athlete's shoes. The shoe covers additionally protect and cover the shoe closure, i.e., shoe laces, buckles, straps, or the like, minimizing the likelihood that the laces or closures will come open during a sporting event.

[0035] In one specific embodiment of the invention, the shoe cover material(s) have a texture on the exterior surface of the shoe cover. The texture is configured to transition a flow pattern of the oncoming air from laminar flow to turbulent flow. The texture may be incorporated into the shoe cover through a number of different means, including for example, a woven material, affixed to the exterior of the shoe cover, or a pattern pressed into the exterior surface of the shoe cover. The texture may be any of a number of textures, including, but not limited to, straight horizontal ribs, straight vertical ribs, zig-zag vertical ribs, diagonal ribs, or nodules. Furthermore, a combination of different textures may be used. In some embodiments, the shoe cover may contain vents to allow fluid to pass through the shoe cover. The shoe cover is suited for providing team or sponsor logos as desired.

[0036] In another embodiment of the invention, the front projection and/or the rear projection may be incorporated into a shoe cover, such that one of the front and/or rear projections is attached to a shoe cover that holds one or both projections in place below the sole of the shoe when the shoe cover is in place over the shoe. For example, as depicted in FIG. **1**, the projection(s) may be attached to, or incorporated into, the shoe cover **120**, such that the projection(s) are positioned in place under the sole **102** of the shoe **104** when the shoe cover **120** is positioned in place over the shoe **104**. For example, the shoe cover may contain pockets into which the front projection and/or the rear projection can be incorporated. Alternatively, the projection(s) may be permanently or transiently attached to shoe cover. Alternatively, the projection(s) may be formed as a single material as part of the shoe cover.

[0037] Similar to the embodiment in which projections of the invention are attached to a bicycle shoe, the projection(s) attached to a shoe cover can be made from any materials that will hold the aerodynamic shape when a bicyclist has engaged the cleat in a bicycle pedal. By way of non-limiting example, the material may be a soft material, such as foam, a flexible polymer, such as polyurethane, or combinations thereof. Alternatively, the material may be a rigid material, such as wood, a stiff polymer such as a polyimide, a rigid foam, a metal, or combinations thereof. The projections may also be formed from a combination of soft and rigid materials to form one or more projections having reduced weight, but having sufficient strength to maintain the shaped form of the projections when the bicyclist has engaged the cleat in a bicycle pedal. The projection(s) may be solid or they may be hollow or contain pockets or slits as desired to attain one or more projection(s) having characteristics of weight and strength to maintain the aerodynamic shape of the projections when the bicyclist has engaged the cleat in a pedal.

[0038] In the embodiments of the invention in which one or both of the front and/or rear projection(s) are used in association with a shoe cover, the shape of the projections may be tapered. Alternatively in these embodiments, the projection (s) may be selected by the user to be more rigid, less aerodynamic and having any suitable shape, such that front projection and/or the rear projection will support a shoe cover to create an aerodynamic surface around an athletic shoe.

[0039] It is also useful to use the projections of the invention individually. That is, a front projection extending below the code portion of an athletic shoe may be used without a rear projection. Similarly, a rear projection extending below the heel portion of the athletic shoe may be used without a front projection. Thus, in a specific embodiment, the shoe cover of the invention may include only a front projection, while the rear projection is not attached to the shoe cover. In another specific embodiment, the shoe cover may include only the rear projection, while the front projection is not attached to the shoe cover.

[0040] The front projections and rear projections of the invention can be made in any suitable shape to enhance the aerodynamics of the athletic shoe. For example, in specific embodiments particularly useful with bicycle shoes, the shape of the front projection and/or rear projection assists in creating an aerodynamic bottom plane, when the bicycle shoe is engaged with a pedal through the cleat, such that air flows cleanly with minimal turbulence under the bottom of the bicycle shoe and past the cleat. For example, FIG. **2** depicts a bottom view of a bicycle shoe having projections **212** and **216** of the invention set against the sole of the bicycle shoe **204**. In the embodiment depicted in FIG. **2**, the shape of a front projection **212** and a rear projection **216** are shown positioned in front of and behind a cleat **208** attached to the sole of the bicycle shoe **204**. As depicted in the embodiment shown in FIG. **2**, the front projection **212** substantially covers the toe region of the shoe and the rear projection **216** substantially covers the rear portion of the shoe from the metatarsal to the heel of the sole of the bicycle shoe **204**.

[0041] As will be clear to one of skill in the art, the shape and material of the front and/or rear projections of the invention may be customized by the user in order to adapt the projections, to closely fit any bicycle shoe and/or cleat, or cleat and pedal combination, or contain any thickness or rigidness required by the user. For example, in the preferred embodiment of FIG. **2**, the front projection **212** is substantially curved near the toe end **228** of the shoe **204** and the rear projection **216** is substantially pointed near the heel **236** of the shoe **204**.

[0042] In specific embodiments, only one of the front and/or rear projections may be present. For example, FIG. **3** illustrates an embodiment in which only the front projection (i.e. a projection in front of the cleat) is used. FIG. **3** illustrates a bicycle shoe including a front projection **312**. In the specific embodiment depicted in FIG. **3**, the front projection **312** may include a sharply-tapered edge **330** adjacent the toe of the bicycle shoe **304**. The tapered edge **330** of the front projection **312** may be tapered such that the front edge **330** is substantially flush with the sole of the bicycle shoe at the toe end **304** of the shoe.

[0043] In specific embodiments, the shoe cover extends past the cleat and pedal such that the cleat and pedal are also covered by the shoe cover. In contrast, FIG. **4** illustrates an embodiment in which the aerodynamic shoe cover **420** covers front and rear projections and the majority or entirety of the athletic shoe, while the cleat **450** attached to the shoe is not covered or impeded from engaging with a bicycle pedal by the shoe cover **420**.

[0044] The foregoing discussion of the invention has been presented for purposes of illustration and description. The

foregoing is not intended to limit the invention to the individual embodiments disclosed herein. In the foregoing description for example, various features of the invention are grouped together in one or more embodiments for the purpose of demonstrating preferred embodiments of the disclosure. One of skill in the art will readily understand that the various features of the embodiments of the invention may be combined in embodiments other than those specifically discussed above. For example, it is specifically contemplated that either the front or rear projections of the invention could be associated with (i.e. attached to) a bicycle shoe or a bicycle shoe cover, and furthermore, either one of a front or rear projection could be associated with the bicycle shoe while the other of a front or rear projection would be associated with a bicycle shoe cover, such that when the bicycle shoe cover is used with the bicycle shoe, both a front and rear projection are present.

What is claimed is:

1. An aerodynamic shoe comprising:

a sole;

a cleat adapted to connect to a bicycle pedal, wherein the cleat is attached to the sole; and,

at least one projection, wherein the at least one projection attaches to the sole adjacent to the cleat.

2. The aerodynamic shoe of claim **1**, wherein the at least one projection comprises a projection selected from a front projection located between a toe of the shoe and the cleat and a rear projection located between the cleat and a heel of the shoe.

3. The aerodynamic shoe of claim **2**, wherein at least one of the front projection and the rear projection varies in thickness such that the thickness at a side of the projection is less than a thickness at an opposing side of the projection.

4. The aerodynamic shoe of claim **1**, wherein the at least one projection comprises a front projection located between a toe of the shoe and the cleat and a rear projection located between the cleat and a heel of the shoe.

5. The aerodynamic shoe of claim **4**, wherein the front projection varies in thickness such that the thickness at a front of the front projection is thinner than a thickness at a rear of the front projection and wherein the rear projection varies in thickness such that the thickness at a front of the rear projection is thicker than a thickness at a rear of the rear projection.

6. An aerodynamic shoe cover comprising at least one of a front projection and a rear projection, wherein the front and rear projections provide an aerodynamic shape to an athletic shoe and wherein the front projection locates between a toe of the shoe and the cleat and the rear projection locates between the cleat and a heel of the shoe, when the shoe cover is covering an athletic shoe during a performance of an athletic event.

7. The aerodynamic shoe cover of claim **6**, wherein at least one of the front projection and the rear projection varies in thickness such that the thickness at a side of the projection is less than a thickness at an opposing side of the projection.

8. The aerodynamic shoe cover of claim **6**, wherein the shoe cover comprises a material selected from the group consisting of lycra, nylon, vinyl, plastics, polymers, leather, latex or the like, or combinations thereof.

9. The aerodynamic shoe of claim **6**, wherein the at least one projection is a front projection.

10. The aerodynamic shoe cover of claim **6**, wherein the shoe cover contains a design.

11. The aerodynamic shoe cover of claim **6**, further comprising a zipper opening.

12. The aerodynamic shoe cover of claim **19**, further comprising a ribbed component.

* * * * *