DETACHABLE SOLE FOR ATHLETIC SHOE

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ABSTRACT

A functional athletic shoe cover that allows for optimizing the shoe for a specific athletic, sport, or daily routine use. The shoe cover covers the mid and lower portions of the shoe, and holds devices such as cleats, studs, spikes or tread patterns in place. The cover is arranged such that the devices are removable and interchangeable, thus avoiding the expense of owning separate shoes for various sports or for different field conditions.
DETACHABLE SOLE FOR ATHLETIC SHOE

[0001] Many people will participate in sports at sometime during their lives. Many of these sports require specially designed and expensive shoes. A family may not be able to afford such the expense of dedicated sporting shoes, and can only afford a pair of all-purpose footwear. But using everyday shoes to play sports presents a number of problems. Everyday shoes are of course not meant to be worn for sporting events and will easily wear and tear from usage. In addition, playing sports in such shoes heightens the possibility of injury to the player.

[0002] Shoes are generally designed for one specific activity, and are suboptimal for use outside of their intended usage design. In addition, existing shoes cannot be easily converted for use in multiple types of sports and activities. There is no known product which easily converts an everyday shoe or athletic shoe into a functional athletic shoe that is customized for use in multiple particular sports and activities.

[0003] Thus what is needed is an economical under-shoe attachment that converts an everyday shoe into an instant functional athletic shoe for the specific sport needed at the time. In particular, an attachment is needed which allows for the interchangeability of traction features. The needed shoe attachment also protects the sole and lower portions of the shoe from wear and tear encountered during the sporting activity. This attachment would not only be functional, but could also be designed as an ornamental under-shoe protector to protect normal everyday shoes from wear.

[0004] The present invention addresses the needs of the prior art. A flexible and resilient shoe cover is disposed to be worn over the lower parts of an athletic shoe, covering and protecting essentially the entirety of the sole and mid-lower portions of the shoe. The shoe cover also incorporates traction elements which extend from the bottom external surface of the shoe cover. In a preferred embodiment, the shoe cover includes at least one inner sole to which the traction elements are affixed. The inner sole is held in place to the sole of the athletic shoe by a flexible and resilient outer sole that is stretched over the shoe. The shoe cover thereby converts the shoe for a specific athletic use.

[0005] In accordance with the objectives of the present invention, an athletic shoe cover 100 for covering an a sole of an athletic shoe is described. The shoe cover has a customizable sole comprising an inner sole plate 120 disposed to reside in contact with the sole of the athletic shoe, at least one traction element 130 disposed on and extending from a surface of the inner sole plate opposite the sole of the athletic shoe, and a flexible resilient outer sole 140 having an internal surface 142 and an external surface 144. At least one aperture 150 extends through the outer sole. The outer sole is disposed to retain the inner sole plate securely in contact with the sole of the athletic shoe, wherein each traction element extends through a corresponding aperture and away from the outer surface of the outer sole. The traction elements may be mechanically replaceable on corresponding attachment points at the inner sole, or may be permanently affixed such that the inner sole itself may be replaced to customize the athletic shoe.

[0006] According to another embodiment of the present invention, an athletic shoe cover is described for covering the sole of an athletic shoe. The shoe cover comprises a sole toe portion constructed of a relatively stiff polymeric material, a sole heel portion constructed of the relatively stiff polymeric material, and an upper sleeve portion constructed of a resilient and flexible polymeric material operable to stretch around the lower portions of the athletic shoe to hold the sole toe portion and sole heel portion to corresponding sole portions of the athletic shoe. A plurality of traction elements is attached to the sole heel portion and the sole toe portion. The traction elements may be removable or permanently affixed to the heel and toe portions.

[0007] According to another embodiment of the present invention, a method for customizing an athletic shoe having a sole, a toe, and a heel for a particular sport is described, comprising the steps of selecting one of a plurality of types of traction elements, attaching each selected traction element to an inner sole plate, placing the inner sole plate against an inner surface of a flexible resilient outer sleeve, and stretching the outer sleeve around a lower periphery of an athletic shoe such that each traction element is held securely against and extending away from the sole of the athletic shoe. The traction elements may optionally be attached after the placing and stretching steps.

[0008] The inventions as described fulfill the objective of conveniently converting everyday shoes to be used for multiple uses. The user thus avoids unnecessary expense while optimizing the footwear to the intended purpose. The invention also may include features that allow the shoe to be easily identified by the owner, such as distinctive colors or styles. The outer sole may also include areas to which ornamental features are applied.

BRIEF DESCRIPTION OF THE FIGURES

[0009] FIG. 1 illustrates a side view of one embodiment of a detachable shoe mold invention.

[0010] FIG. 2 illustrates a bottom view of the invention, illustrating one embodiment of cleat attachments.

[0011] FIG. 3 illustrates cleat styles according to one embodiment of the invention.

[0012] FIG. 4 illustrates an optional attachment to the detachable shoe mold invention.

[0013] FIG. 5 illustrates a side view of the invention as attached to a shoe.

[0014] FIG. 6 illustrates another embodiment of the shoe mold invention as manufactured.

[0015] FIG. 7 illustrates another embodiment of the shoe mold, including ornamental features, as attached to a shoe.

[0016] FIGS. 8a and 8b show respectively a side view of another embodiment of the athletic shoe cover as applied to an athletic shoe as well as separate from the shoe.

[0017] FIGS. 8c, 8d, 8e, and 8f show an exploded side view of the elements of a preferred embodiment of the invention.

[0018] FIG. 9 illustrates a top view of another embodiment of the athletic shoe cover.

[0019] FIG. 10 illustrates a top view of an outer sole portion of the athletic shoe cover.

[0020] FIGS. 11a and 11b illustrate a top view of an inner sole plate portion of the athletic shoe cover.

[0021] FIGS. 12a and 12b illustrate a bottom view of the athletic shoe cover, both without cleats attached and with cleats attached.

[0022] FIG. 13 illustrates a perspective view of another embodiment of the athletic shoe cover.

[0023] FIG. 14 is a stylized illustration of the athletic shoe cover.
DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0024] Now turning to the Figures, FIG. 1 shows an embodiment of a detachable sole cover for a shoe (not shown in this view), which comprises a lower shoe mold. The detachable sole cover is comprised of a toe portion 1 and a toe cap 2. Toe cap 2 may further comprise ornamental features. A heel grip 4 holds the detachable sole cover firmly to the shoe, and is designed with a gripping surface for easy attachment and removal. The lower shoe mold also includes attachment locations for cleats 3. The cleats 3 are preferably designed for use in a specific sport.

[0025] FIG. 2 illustrates a bottom view of the invention, illustrating one embodiment of cleat attachments. A lower surface 6 has a plurality of attachment points 5 for cleats 3. The arrangement of the attachment points 5 can of course be varied within the scope of the invention. The lower surface is preferably constructed of a durable and somewhat flexible material which resists tearing of the attachment points 5 from lower surface 6 during wear.

[0026] FIG. 3 illustrates a two possible cleat styles according to one embodiment of the invention. The rounded cleat style on the left is common to field sports such as football or soccer. The square cleat style on the right might be used in baseball. It is easily seen that the user need only keep sets of cleats available for the various sports, or for the various expected field conditions, instead of separate shoes for each.

[0027] FIG. 4 illustrates an optional attachment 7 that can be attached to the cleat of the detachable sole cover.

[0028] FIG. 5 illustrates the combination 9 of the detachable sole cover joined to a shoe. It can be seen that the detachable sole cover is stretched or slipped to the shoe prior to use. The sole cover then functions as the contact surface between the user's foot and the playing surface.

[0029] FIG. 6 illustrates a view of another embodiment of the detachable sole cover. The sole cover 10 is preferably molded from a resilient rubber or plastic material with attachment points for the desired cleats. In an alternate embodiment, the sole cover and cleats can be formed together such that the cleats cannot be changed out. In this alternate embodiment, the user exchanges the entire detachable sole cover according to the intended use.

[0030] FIG. 7 illustrates another embodiment of a detachable sole cover 11, as applied to an athletic shoe. As can be seen, the sole cover 11 may include ornamental designs particular to the sport, to the shoe, or to the manufacturer of the cover 11.

[0031] FIG. 8a is a side view of a preferred embodiment of an athletic shoe cover 100 as worn with an existing athletic shoe 110.

[0032] FIG. 8b is a side view of the preferred embodiment of the athletic shoe cover 100 with its primary external features identified. The external outer sole portion of the athletic shoe cover 100 may be constructed of any number of flexible, resilient and durable materials, such as rubber, silicone, stretch fabrics, or polymeric material. Preferably, the material resists tearing and scuffing as well. A front toe cap 152 is of a cupped shaped area to comfortably and securely fit over the toe of the athletic shoe 110, and serves to hold the front portion 153 of the athletic shoe cover in place. The sole mid portion 114 of is preferably constructed of a highly flexible and durable rubber. Mid portion 114 may be of thicker than the other portions if needed to resist wear during use. A lower heel area 139 of athletic shoe cover 100 is preferably of a resilient durable rubber. A heel tab 138 may be disposed atop the lower heel area 139 in order to assist the user in donning the cover. The entire external outer sole portion may be molded in a single piece to reduce manufacturing costs.

[0033] Also shown in FIG. 8b are traction elements 132. As shown here, traction elements 132 are metal cleats attached to the bottom of athletic shoe cover 100. Traction elements 132 may also be of a different shape or material (plastic or hard rubber) for optimized use in other sports.

[0034] FIGS. 8c through 8f illustrate an exploded side view of the preferred embodiment of athletic shoe cover 100. Outer sole 140 is shown in FIG. 8c, preferably molded in one piece of a resilient and flexible material. Outer sole 140 contains an internal surface disposed to reside in contact with athletic shoe 110 and an external surface 144 disposed to be in contact with the external environment. One or more apertures 150 are disposed in the sole which correspond to the locations of traction element 130, which when assembled extends from internal through external surfaces of outer sole 140. A side portion 156 (not shown) extends from the toe cap to the outer sole heel and is disposed to cover and protect the entirety of left and right lower side portions of the athletic shoe 110.

[0035] FIGS. 8d and 8e illustrate inner sole plate 120, and in this embodiment secondary inner sole plate 128. Inner sole ball plate 120 is comprised of a durable rubber or fabric layer 121, which main purpose is to give grip to the shoe and conceal the more rigid inner sole plate 122. Preferably, layer 121 and cleat plate 122 are adhered together with high strength adhesive. Second inner sole plate 128 is similarly comprised of a durable layer 129 adhered to an inner sole heel plate 124. Ball plate 122 and heel plate 124 is preferably constructed of a relatively rigid high strength plastic, rubber, metal, or composite material.

[0036] In this embodiment, traction elements 130 are attached to plates 122, 124 prior to insertion into outer sole 140. Traction elements may be cleats, studs, or spikes. The traction elements may be permanently affixed to the plates, or may be removable or replaceable by the use of mechanical attachment points.

[0037] A method for customizing athletic shoe 110 with athletic shoe cover 100 is readily seen by way of the FIGS. 8a through 8f illustrations. The user first selects one of a plurality of types of traction elements suitable for a particular sport, and then attaches the selected traction elements to the inner sole plate. Alternatively, the user may select a pre-manufactured inner sole plate already having the traction elements installed. The user then places or inserts the inner sole plate against the inner surface of the flexible resilient outer sleeve, such that the traction elements extend through the apertures 150 in the sole of the outer sleeve. Finally, the user stretches the outer sleeve 140 around a lower periphery of an athletic shoe such that each traction element is held securely against and extending away from the sole of the athletic shoe. This last step is typically accomplished by hooking the toe cap 152 of the flexible resilient outer sleeve over the toe of the athletic shoe and hooking the heel portion 154 of the flexible resilient outer sleeve over the heel of the athletic shoe, preferably by gripping a heel grip tab 138 disposed on the heel portion. An alternative method may be used wherein the traction elements are not installed to the plate before the cover is applied. When needed, then, the traction elements are attached to the inner sole plates through the apertures 150 after the placing step and the stretching step.
In an alternate construction of athletic shoe cover 100, the assembly is completed during manufacturing. The sole plates 120, 128 are assembled and inserted into the empty outer sole 140 during manufacturing. If traction elements 130 are installed then, they are fitted through the outer sole 140 through apertures 150. A high strength adhesive preferably bonds the entire assembly together. In this embodiment, it is envisioned that the traction elements 130 may optionally be configured to be replaceable through the apertures 150 if mechanical attachment points are included in the sole plates.

FIG. 9 and FIG. 10 illustrate top views of the athletic shoe cover 100. FIG. 9 illustrates the appearance of the shoe cover after assembly. The front region 22 of the athletic shoe cover 100 is constructed of a rugged material which is capable of managing the abuse of high impact activities. Preferably, thicker rubber is employed here that will be resilient to wear and tear. Similarly, the top of heel region 23 of the athletic shoe cover 100 is configured to play several key roles in the shoe cover's function. Heel region 23 preferably has a high shear head design or shape to increase the area of friction and grip between a person's shoe and the athletic shoe cover attachment. The shear head design may be the most flexible region of the shoe cover 100 so as to allow one model of an athletic shoe cover to fit several shoe sizes. By this means, the shoe cover 100 is also able to expand with a growing child's shoe size.

Also shown in FIG. 9 is the top view of the inner sole layers 121 and 129, for the ball area and the heel area of the foot respectively. These inner sole layers 121, 129 are disposed with textures and materials such that the surface creates traction against the shoe and thus minimizes any movement between shoe 110 and shoe cover 100. Different types of patterns for traction for creating surface tension and maximizing performance fall within the scope of the invention.

Mid foot region 14 is preferably constructed of a relatively flexible and durable rubber material, possibly thicker in areas that experience additional wear and tear. Region 13 is also the area where ornamental features such as the company logo may reside.

FIG. 10 illustrates a top view of the outer sole 140 of the assembly, empty and void of any material or contents. An outer sole internal surface 142 is preferably constructed of a highly flexible, strong, and resilient rubber material. Apertures 150 are disposed in outer sole 140 of a size and arrangement to fit a variety of sports cleats, including baseball, soccer, football, cricket, softball and others.

FIG. 11a illustrates a top view of inner sole plate 120 and second inner sole plate 128, in particular layers 121, shaped for the ball, and 129, shaped for the heel, which are disposed to reside in contact with the sole of athletic shoe 110. In addition to the friction elements shown and described, each will preferably consist of a durable material that is about 8 mm thick.

FIG. 11b illustrates another view of inner sole plate 120 and second inner sole plate 128, in particular inner sole ball plate 122, and inner sole heel plate 124, which are disposed to reside in contact with the internal surface of outer sole 140. Each plate 122, 124 is made of high strength flexible plastic or composite material. Each functions to absorb and divert any energy away from the athletic shoe cover attachment, eliminate shifting between shoe and cover, and provide a support base for traction elements 130, such as cleats. Metal cleats may be molded into the plates at manufacture. If of plastic or rubber, cleats can be formed from one single mold or attached separately. In one embodiment, plates will be bonded to the shoe cover 100 with a high strength adhesive.

FIG. 12a illustrates a bottom view of shoe cover 100, having athletic cleats 132 installed in apertures 150 (not shown). In addition, mid foot region 14 is preferably constructed of a relatively flexible and durable rubber material, possibly thicker in areas that experience additional wear and tear. Region 14 should also be configured to minimize the resistance to bending of the shoe during use.

FIG. 12b illustrates a bottom view of shoe cover 100 without athletic cleats installed. Apertures 150, each of which corresponds to a cleat 132, are visible.

FIG. 13 illustrates yet another embodiment of shoe cover 200, which is single integrated cover. In this embodiment, studs 134 are either permanently affixed to the cover 200, or may be replaceable. Inner soles (not shown) are bonded to the outer sole 140 in this embodiment. Heel tab 138 is used to affix the shoe cover 200 to the athletic shoe 110 after hooking toe cap 252 over the toe of the shoe.

FIG. 14 illustrates yet another embodiment of shoe cover 200 as it would appear in concert with shoe 110.

The scope of the above-described inventions also encompasses configurations of the athletic shoe cover which replaces cleats altogether with sole grip patterns for use on basketball courts and the like. The detachable sole could thus be manufactured for use on wood surfaces and street surfaces. In addition to being formed with a customized sole grip pattern, the composition of the material used for the sole itself could be optimized, such as by being formed of durable rubber, depending on the intended playing surface. The shoe cover would not only be functional for that specific sport, but could also incorporate decorative patterns, logos or colors that are customized to a team's colors or styles.

In the claims:

1. An athletic shoe cover (100) for covering the sole of an athletic shoe, the shoe cover having a customizable sole, comprising:
   - an inner sole plate (120) disposed to reside in contact with the sole of the athletic shoe;
   - at least one traction element (130) disposed on and extending from a surface of the inner sole plate opposite the sole of the athletic shoe; and
   - a flexible resilient outer sole (140) having an internal surface (142), an external surface (144), and at least one aperture (150), wherein the outer sole is disposed to retain the inner sole plate securely in contact with the sole of the athletic shoe, wherein each traction element extends through a corresponding aperture and away from the outer surface of the outer sole.

2. The athletic shoe cover of claim 1, wherein the outer sole further comprises:
   - a toe cap (152) disposed to stretch around and over the shoe; and
   - an outer sole heel (154) disposed to cover a heel area of the shoe, wherein the toe cap and outer sole heel are operable to retain the shoe cover and inner sole plate in contact with the sole of the athletic shoe.

3. The athletic shoe cover of claim 2, further comprising left and right side portions (156, 158) extending from the toe cap to the outer sole heel and disposed to cover the entirety of left and right lower side portions of the athletic shoe.
4. The athletic shoe cover of claim 2, further comprising a heel grip tab disposed on the outer sole heel.

5. The athletic shoe cover of claim 1, further comprising a second inner sole plate (128) and at least one second traction element (136) disposed on and extending from a surface of the second inner sole plate opposite the sole of the athletic shoe, wherein the inner sole plate is adapted to overlie only a ball sole portion of the athletic shoe and the second inner sole plate is adapted to overlie only a heel sole portion of the athletic shoe, and further wherein the inner sole plate and second inner sole plates are constructed of a relatively stiff and durable material.

6. The athletic shoe cover of claim 1, wherein the traction element is removably attached to the inner sole plate.

7. The athletic shoe cover of claim 1, wherein the traction element is a type selected from the group comprising a cleat, a stud, and a spike.

8. The athletic shoe cover of claim 1, wherein the inner sole plate is constructed of a relatively stiff and durable material that is adhesively bonded to the internal surface of the flexible resilient outer sole.

9. An athletic shoe cover for covering the sole of a shoe, the shoe cover comprising:
   a sole toe portion constructed of a relatively stiff polymeric material;
   a sole heel portion constructed of the relatively stiff polymeric material;
   an upper sleeve portion constructed of a resilient and flexible polymeric material operable to stretch around the lower portions of the shoe to hold the sole toe portion and sole heel portion to corresponding sole portions of the shoe; and
   a plurality of traction elements attached to the sole heel portion and the sole toe portion.

10. The shoe cover of claim 9, further comprising a plurality of mechanical attachments disposed on the sole toe portion and sole heel portion disposed to removably receive one of the plurality of traction elements.

11. The shoe cover of claim 9, wherein the traction elements are of a type selected from the group comprising a cleat, a stud, and a spike.

12. The shoe cover of claim 9, wherein the sole toe portion and sole heel portion are bonded to the upper sleeve portion.

13. The shoe cover of claim 9, wherein the plurality of traction elements are permanently attached to the sole heel portion and the sole toe portion.

14. The shoe cover of claim 9, further comprising a lower sleeve portion constructed of the resilient and flexible polymeric material which completely covers a portion of the shoe sole not covered by the sole toe portion and the sole heel portion.

15. The shoe cover of claim 9, wherein the upper sleeve portion further comprises:
   a toe cap (252) disposed to stretch around and over the shoe; and
   an outer sole heel (254) disposed to cover a heel area of the shoe,
   wherein the toe cap and outer sole heel are operable to retain the shoe cover and inner sole plate in contact with the sole of the shoe.

16. The shoe cover of claim 15, further comprising a heel grip tab disposed on the outer sole heel.

17. A method for customizing an athletic shoe having a sole, a toe, and a heel for a particular sport, comprising the steps of:
   selecting one of a plurality of types of traction elements;
   attaching each selected traction element to an inner sole plate;
   placing the inner sole plate against an inner surface of a flexible resilient outer sleeve; and
   stretching the outer sleeve around a lower periphery of an athletic shoe such that each traction element is held securely against and extending away from the sole of the athletic shoe.

18. The method of claim 17, wherein the stretching step further comprises hooking a toe cap of the flexible resilient outer sleeve over the toe of the athletic shoe and hooking a heel portion of the flexible resilient outer sleeve over the heel of the athletic shoe.

19. The method of claim 18, wherein the hooking a heel portion further comprises gripping a heel grip disposed on the heel portion.

20. The method of claim 17, wherein the attaching step occurs after the placing step and the stretching step.

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