HEALTH CARE SOCK

The present invention discloses a health care sock having an interior cavity for receiving a human foot through an opening portion, comprising an outer layer conforming to the shape of the foot, a toe portion, a heel portion and a base adjacent to the outer layer and conforms to the sole of the foot in order for the sole to rest onto the base.
HEALTHCARE SOCK

[0001] This application claims priority to the Malaysian Patent Application No. PI 2014702871 filed on Sep. 30, 2014, the content of which is fully incorporated by reference herein.

[0002] The present invention relates to daily necessities. More particularly, the present invention relates to a foot care product. Most particularly, the present invention relates to a healthcare sock, which helps protects the foot of a user, improves the comfort level of a user and having anti-slip function for protecting the foot.

BACKGROUND OF THE INVENTION

[0003] Starting in the 1980’s and continuing to the present, significant advances in fiber technology have been applied to the sock industry, resulting in a wider variety of socks made for specialized use. Whatever the situation—whether it is running, camping, relaxing at home, or waiting out a long business meeting, donning a sock made with consideration of the movement and properties of the foot makes an astounding difference to overall comfort. Below is a general list of sock materials and their respective qualities.

[0004] Antimicrobial socks are treated with an agent that forms a molecular bond to the fibers themselves, acting as a barrier between the socks and the microorganisms attempting to land on them. These non-leaching antimicrobial agents reduce foot odor by impeding mold and mildew, and prolong the life of the sock by preventing excess bacteria from compromising the integrity of the fabric.

[0005] Acrylic fibers and yarns are generally characterized by their durability and their hydophobic quality: unlike cotton socks, acrylic socks wick moisture away from the foot and reduces the risk of blisters. For this reason, acrylic socks are highly recommended for any athletic enterprise where shear force on the foot causes rubbing and possible irritation. Because acrylic socks do not absorb perspiration, they are naturally sterile and easy to clean without bleach. While some acrylics are more exclusive than others, all of the acrylic socks on TopSocks are woven with special attention to yarn quality and durability.

[0006] Bamboo’s natural flexibility, softness, and lightness gave way to an ecologically-friendly fiber with astounding properties for the sock industry. The natural anti-bacterial and antiperspirant elements that allow Bamboo to proliferate in hot Asian climates translate into highly-durable socks that keep feet dry and hygienic. Recommended year-round for a variety of activities, these are exceedingly soft, comfortable socks, cool in the summer, and, as they are 100% biodegradable, they are as helpful to the environment as they are to the foot.

[0007] Cashmere speaks to the ultimate luxury in wool socks. These are indulgently soft, and can be appropriate for any climate, although they are especially useful in the winter due to their high moisture content and capacity for insulation.

[0008] Coolmax® is the quintessential fiber for athletic socks due to its superior wicking ability. The revolutionary brand from Invista is soft to the touch, and constructed with four channel cross-sectioning that moves perspiration away from the body to the outer surface of the fabric, where it evaporates before dampening the clothes. Coolmax® garments are breathable, lightweight, and preferred by top athletes around the world.

[0009] Cotton has been a material used in most casual and formal socks in recent history. Cotton socks are comfortable, have good stretch, and absorb moisture from the foot. Many high-quality socks are made with treated mercerized cotton to encourage an even softer texture and richer colors during the dyeing process.

[0010] Holofiber®, a revolutionary innovation which has proved through clinical testing to improve circulation and oxygenation by 10 to 18%, works by converting certain wavelengths of visible and invisible light into energy. This altered light energy, transmitted through the sock and into the skin, serves to oxygenate the body, and can improve the comfort and performance of athletes, speed the healing of ulcers, and ease pain from tired feet. Because Holofiber® is a responsive textile, some people have noted a warming or tingling sensation when wearing Holofiber® socks. This sensation indicates blood flow engaging the foot, and subsides when the body returns to a natural state of equilibrium. Socks with Holofiber® are especially useful for diabetics and those with ailments affecting the circulatory system.

[0011] Lycra® is the most popular form of stretch fiber, or spandex. An extremely versatile fabric, it dries quickly, retains its shape, and remains soft as it compresses the skin without restricting blood flow. Lycra® is an essential material that enables many socks to fit snugly and comfortably to the foot, and when strategically placed, can help relieve venous insufficiency and blood clotting in the feet and legs.

[0012] Merino Wool, the most highly-regarded wool used for socks, has the capacity to simultaneously wick moisture away from the foot while its inherent 8% moisture content moisturizes dry or cracked skin. Because Merino Wool is hypoallergenic, breathable, resilient, and wicks moisture even when damp, it is especially beneficial in socks worn in cold weather and outdoor winter activities.

[0013] Like other silk products, silk socks are lightweight with a smooth, soft texture that feels remarkable on the skin. Although silk is an incredibly strong natural fiber, silk socks are thin—often uses as sock liners—and they lose considerable strength when wet. Silk is utilized most often in formal footwear.

[0014] Thermax is a wicking polyester with a hollow core that traps air around the body and provides extra insulation, even when wet. Thermax is used in premium outdoor sport and ski performance socks.

[0015] Thanks to state-of-the-art fiber technology and construction techniques, modern socks have evolved into high-tech sports equipment with possible medical applications. Blisters, foot swelling, toenail damage, and pediatric bacteria have been the most pervasive afflictions compromising athletes’ performance. All of these ailments are caused by the toll of shear force absorbed into skin when running, jumping, and pivoting, and all are exacerbated by cotton socks.

[0016] Because cotton retains rather than repels moisture, when cotton socks absorb sweat during exercise they swell, bunch, wrinkle, become less-breathable, and cause irregular friction that leads to blisters and foot bacteria. However, socks made from hydrophobic fibers, and which are constructed in a cross-sectional geometry, wick moisture away from the foot and encourage evaporation. In multiple studies cotton has been proven to absorb three times more moisture than acrylic, and fourteen times more moisture than CoolMax®. Once wet, cotton swells up to 45% and wool swells up to 35%, while acrylic fibers swell less than 5%. In ranking order, fibers that wick moisture away from the foot best are:
SUMMARY OF THE INVENTION

In view of the above, it is advantageous to provide a health sock comprising a combination of cotton, nylon and silicone, which helps protect the foot of a user, improves the comfort level of a user and having anti-slip function for protecting the foot.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view illustrating the sock as applied to a human foot, according to a first embodiment of the present invention;

FIG. 2 is a side elevational view illustrating the sock as applied to a human foot, according to a second embodiment of the present invention;

FIG. 3 is an enlarged view of the toe portion of the sock, according to the present invention;

FIG. 4 is a diagram of the sock showing its base layers, as applied to a human foot;

FIG. 5 is a diagram illustrating the base layers of the sock, according to the present invention; and

FIG. 6 is a diagram illustrating an outer layer of one of the base layers of the sock, according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring to FIG. 1, the health care sock 100 of the present invention is applied to a human foot 102. The sock 100 according to this preferred embodiment is illustrated as having an outer layer 104 generally conforming to the shape of the human foot 102. The sock 100 comprises a toe portion 106, a heel portion 108 and a base 110. The sock 100 of the present invention has an interior cavity suitable for receiving the human foot 102 therein. Leg 112 will extend upwardly and outwardly of the sock 100. The sock 100 will be attached to the human foot in the manner of a conventional sock. The top of the body of the sock 100 is provided with an elastic rubber band 114 in order to facilitate the opening portion 116 when worn and the top of the socks after wearing tightening, so easy to slip the socks and enhances the wearing comfort. In an embodiment, the elastic rubber band 114 is contained in the circumferential outlining the opening portion 116 in order to facilitate the opening portion 116 to receive the foot 102 and enhances wearing comfort.

FIG. 2 shows a second embodiment of the sock 100 of the present invention, when applied to a human foot 102. The sock according to this embodiment can be specially designed and advantageously used by Muslim men during Hajj & Umrah sessions in accordance with the rules and regulations of Muslim men’s cloths during performing those two activities within a certain period of time.

In this embodiment, the interior cavity of the sock 100 receives the human foot 102 therein, which leaves the foot above the heel portion 108 to be exposed. An additional rubber band 128 is attached to a portion at the circumference of the opening 116 containing the rubber band 114 in order to surround the leg 112, hence holding the sock 100 from slipping outside the foot 102. In the worn position, the space between the heel portion 108 and the rubber band 128 is not covered by the sock 100.
The sock 100 will be attached to the human foot 102 in this manner of which is in accordance with Muslim rules and regulation, which states that the portion of the Muslim man’s foot should not be covered during performing Hajj or Umrah, which is the back side of the foot above the heal.

As shown in FIG. 3, the toe portion 106 includes a big toe portion 118 and a general toe portion 120. When the interior cavity receives the human foot 102, the big toe portion 118 receives the big toe of the foot, while the general toe portion 120 receives the remaining toes of the human foot 102. With this, the big toe and remaining toes of the human foot are separated when the sock is worn.

Referring to FIG. 4, the outer layer 104 of the sock has a generally oval shape and conforms to the cross-sectional shape of the human foot 102. The base 110 is positioned adjacent to the outer layer 104 and conforms to the sole 130 of the foot 102 in order for the sole 130 of the foot 102 to rest comfortably onto the base 110. The base 110 comprises three layers namely inner base layer 122, middle base layer 124 and outer base layer 126.

Also referring to FIG. 4, the inner base layer 122 is positioned adjacent to the sock outer layer 104 and extends at a predetermined length around an interior of the outer layer 104, so as to conform to the sole 130 of the foot 102. The middle base layer 124 is positioned adjacent to the inner base layer 122 and extends around an interior of such inner base layer 122. Outer base layer 126 is positioned adjacent to the middle base layer 124 and extends around an interior of the middle base layer 124.

FIG. 5 shows the base layer of the sock 100 comprising three (3) layers, namely inner base layer 122, middle base layer 124 and outer base layer 126. In a preferred embodiment, the middle base layer 124 includes a gel layer 134 positioned adjacent to the inner base layer 122 and extends around an interior of such inner base layer 122. Preferably, the gel layer 134 is a silicon gel layer. Referring to FIG. 6, the bottom portion of the outer base layer 126 is affixed with deformable members 132. The deformable members 132 are positioned directly on the bottom portion of the outer base layer 126, conforming to the length of the sole 130. With this configuration, the deformable members 132 are in direct contact with the interior surface of the sole of a shoe.

In a preferred embodiment, the deformable members 132 are a plurality of silicone pads affixed to the bottom portion of the outer base layer 126, which is an area corresponding to the sole 130 of the human foot. On the other hand, the deformable members 132 are in direct contact with the interior surface of the sole of a shoe when the sock is in use. The silicone pads 132 are suitably deformable to provide a more gradual conforming of the sock to the contour of the human foot 102. Hence, the present invention provides a sock 100 and shoe/sole 130 lining that suitable conforms to the contours of the human foot 102. Within the concept of the present invention, various silicone pads 132 can be placed in the position as shown in FIG. 6.

It is an advantage of the present invention to provide a sock 100 that is comfortable to be worn. The comfort for the foot is contributed by the gel layer 134, which acts as a soft carpet base, hence providing comfort during walking and long standing, as compared to a conventional sock.

It is also another advantage of the present invention to provide a sock having good sweat absorption effect. The sweat absorption property is contributed by the preferred sock fabric composition of the present invention comprising cotton 76.7%, polyester 21.25%, and elastane 2.0%, which result in moisture regain of 8.5% for cotton and 1.5% for both polyester and elastane. This is in accordance with European regulation EU 1007/2011, that provides comfortable sweat absorption effect to the foot.

It is a further advantage of the present invention to provide a sock that is capable of improving skin and heal cracked feet effect. This property is contributed by the combination of both gel layer 134, together with the inner base layer 122, and the sock fabrics 100, which protect the foot from heal crack. The heal 108 and the skin of the bottom portion of the foot 102 is surrounded with the gel layer when worn, which gives the skin and the heal 108 a comfortable zone and protects it from crack, as well as percentage of the regain of moisture that softens the skin.

It is yet another advantage of the present invention to provide a sock having a big toe portion 118 and a general toe portion 120 which allows separation of the big toe from the remaining small toes. This separation allows the sock to be rigid and will not tilt, giving the user a comfortable feeling, and also allows the user to wear either a normal shoe or an open sandal (used mainly in Gulf countries and some other countries).

It is another advantage of the present invention to provide a sock that leaves a certain part of the leg to be exposed, i.e. between the heel portion 108 and the rubber band 128. This allows the sock 100 to be suitably worn by men during Hajj and/or Umrah, which is also in compliance with the Muslim rules and regulation, which states that the portion of the Muslim man’s foot should not be covered during performing Hajj or Umrah, which is the back side of the foot above the heal.

The foregoing description of the present invention is for the purpose of illustration and explanation. Various changes in the details of the construction can be made within the scope of the claims without departing from the scope of the present invention.

1. A health care sock having an interior cavity for receiving a human foot through an opening, wherein the sock comprising:
   an outer layer conforming to the shape of the human foot;
   a toe portion;
   a heel portion; and
   a base adjacent to the outer layer and conforms to the sole of the foot in order for the sole to rest onto the base.

2. A health care sock according to claim 1, wherein the circumference outlining the opening comprises a first elastic member in order to facilitate the opening to receive the foot.

3. A health care sock according to claim 1, wherein the interior cavity of the sock receives the human foot therein, which leaves a portion of the leg above the heel portion to be exposed.

4. A health care sock according to claim 1, further comprising a second elastic member attached at a position relative to the circumference of the opening containing the elastic member, thus surrounding the leg and holding the sock from slipping outside the foot.
5. A health care sock according to claim 1, wherein the toe portion includes a big toe portion and a general toe portion in order to separate the big toe and remaining toes of the human foot when the sock is worn.

6. A health care sock according to claim 1, wherein the base comprises an inner base layer, a middle base layer and an outer base layer.

7. A health care sock according to claim 6, wherein the middle base layer includes a gel layer positioned adjacent to the inner base layer and extends around an interior of the inner base layer.

8. A health care sock according to claim 6, wherein the gel layer is a silicon gel layer.

9. A health care sock according to claim 6, wherein the bottom portion of the outer base layer is affixed with deformable members, the deformable members are in direct contact with the interior surface of the sole.

10. A health care sock according to claim 9, wherein the deformable members are a plurality of silicone pads that conforms the sock to the contour of the foot.

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