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(54) **BABY SOCKS AND RELATED ITEMS WITH IMPROVED IN-PLACE RETENTION**

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ABSTRACT

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An improved baby sock that will reduce the instance of the sock coming off the foot while in use and related applications to children's, women's, and men's socks. Application of the invention to improved in-place retention for hats, mittens, foot-less onesies, shoes, and bedding are presented.

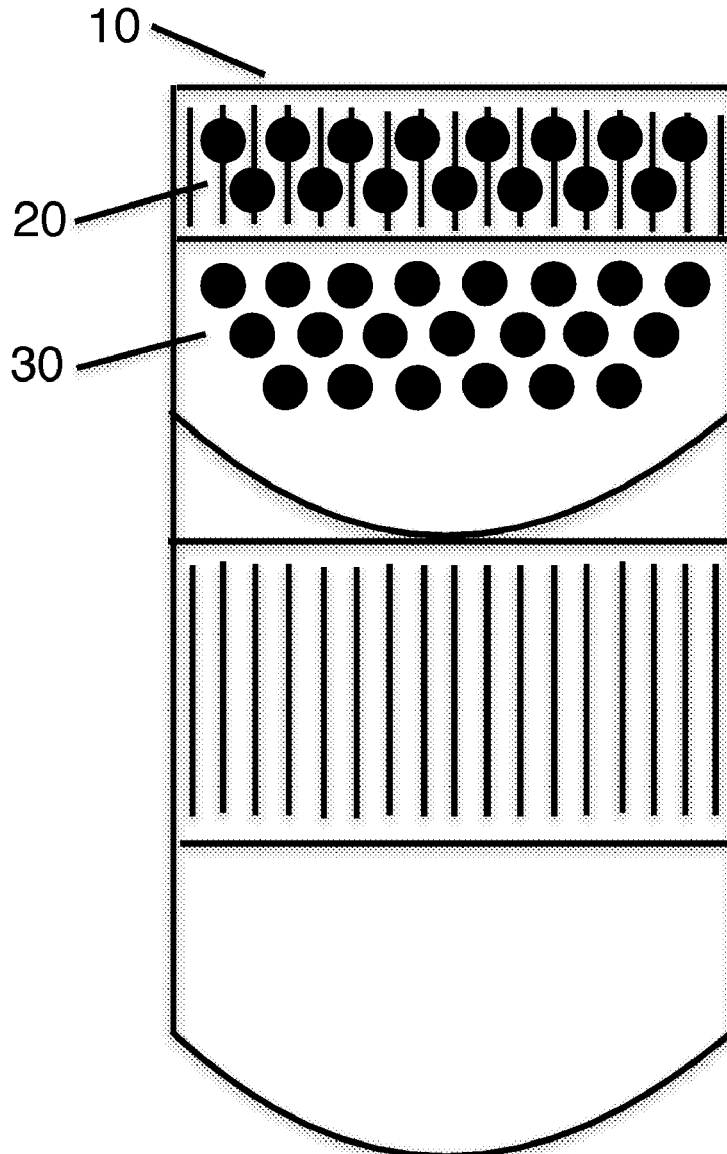


Fig. 1

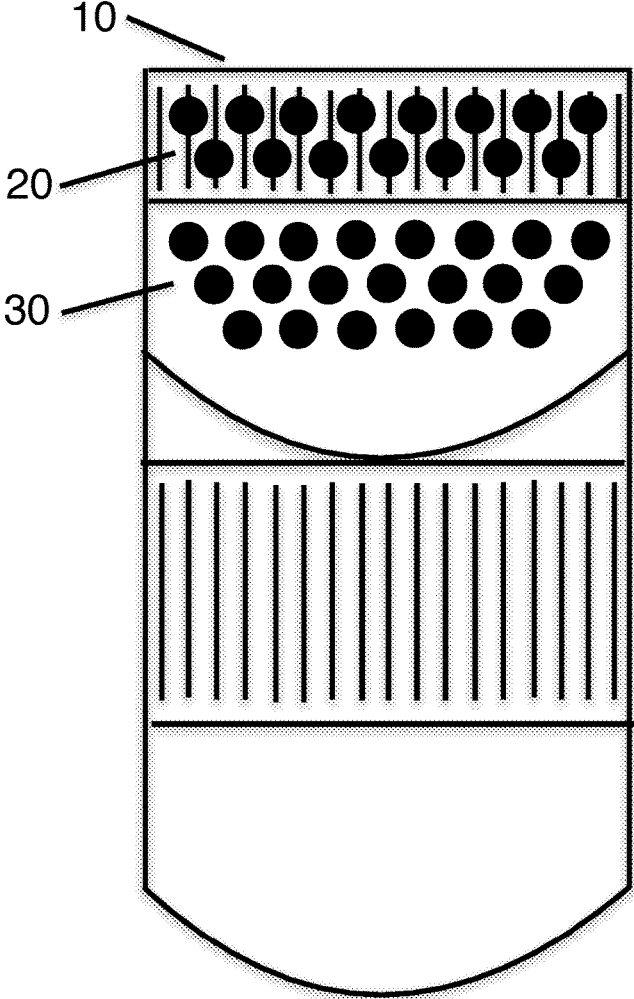


Fig. 2

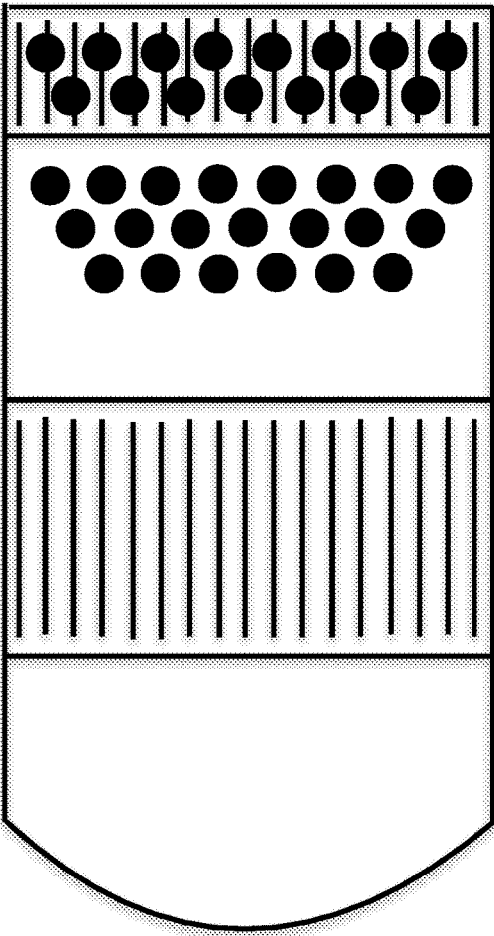


Fig. 3

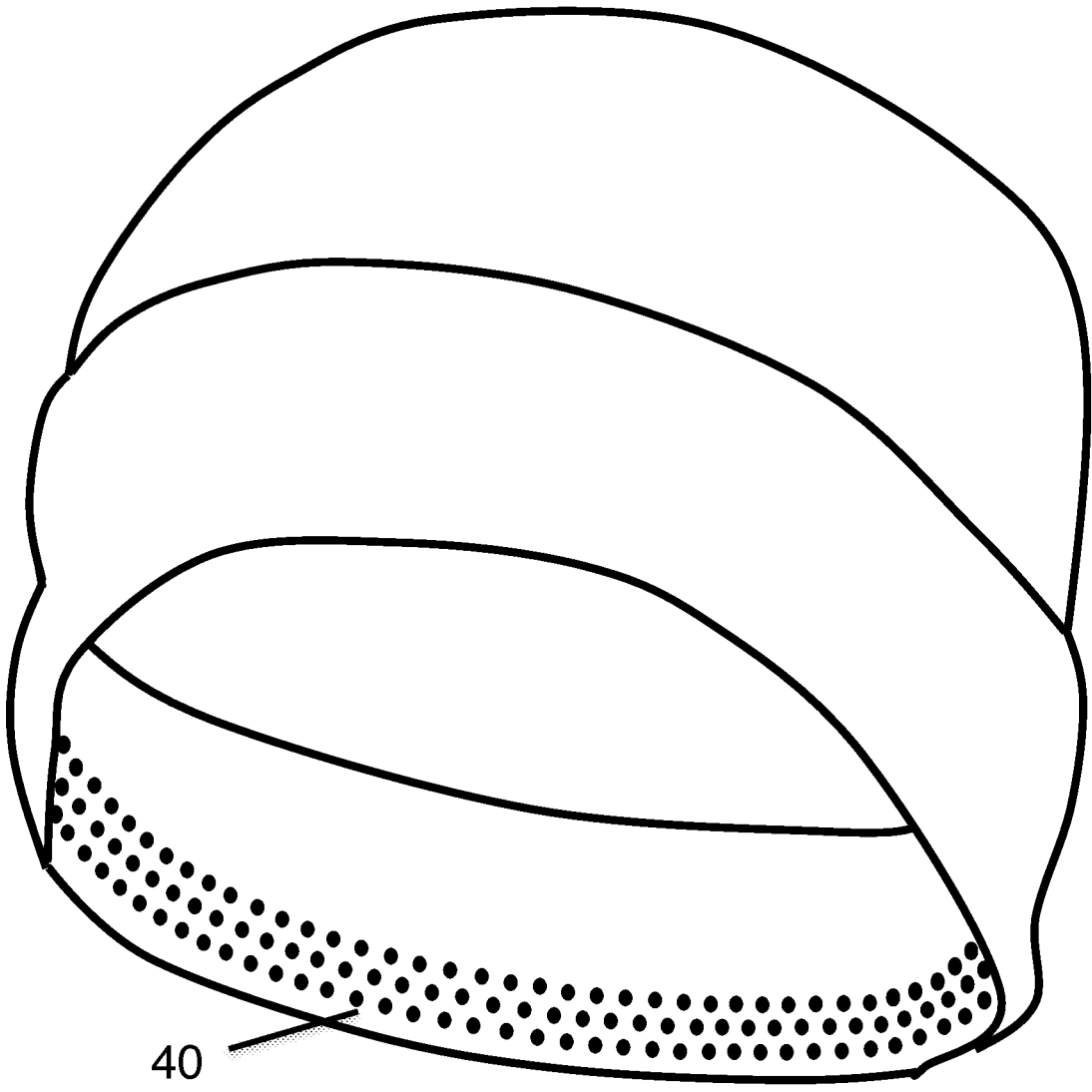


Fig. 4

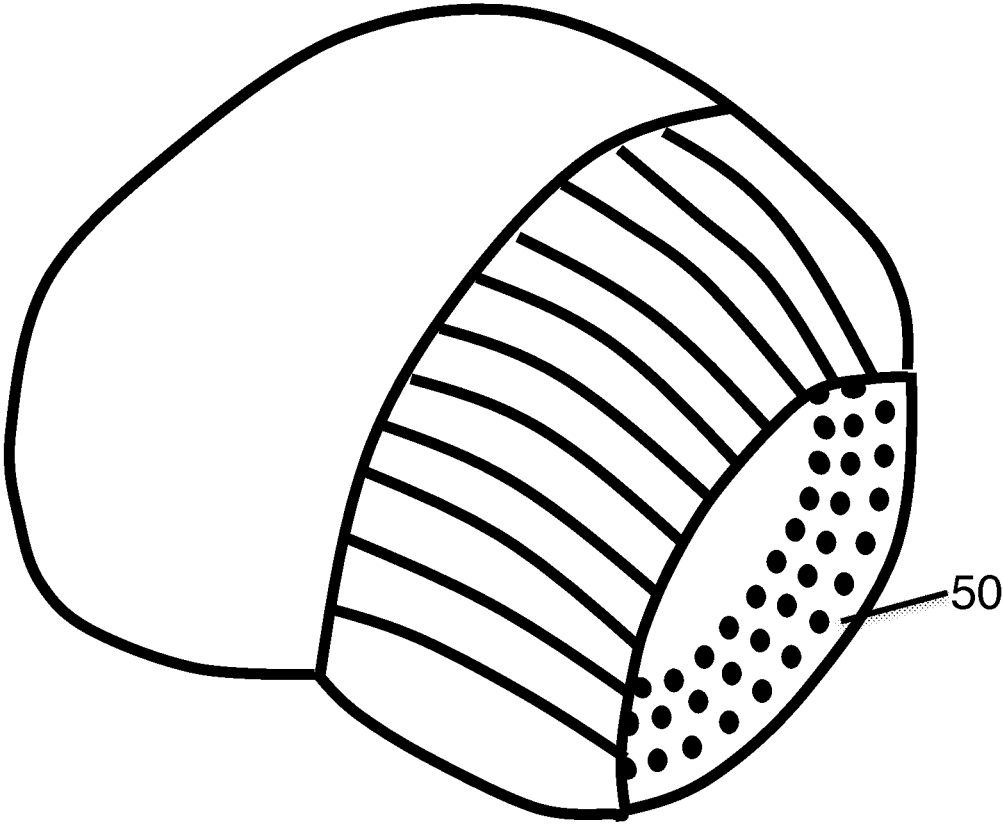


Fig. 5

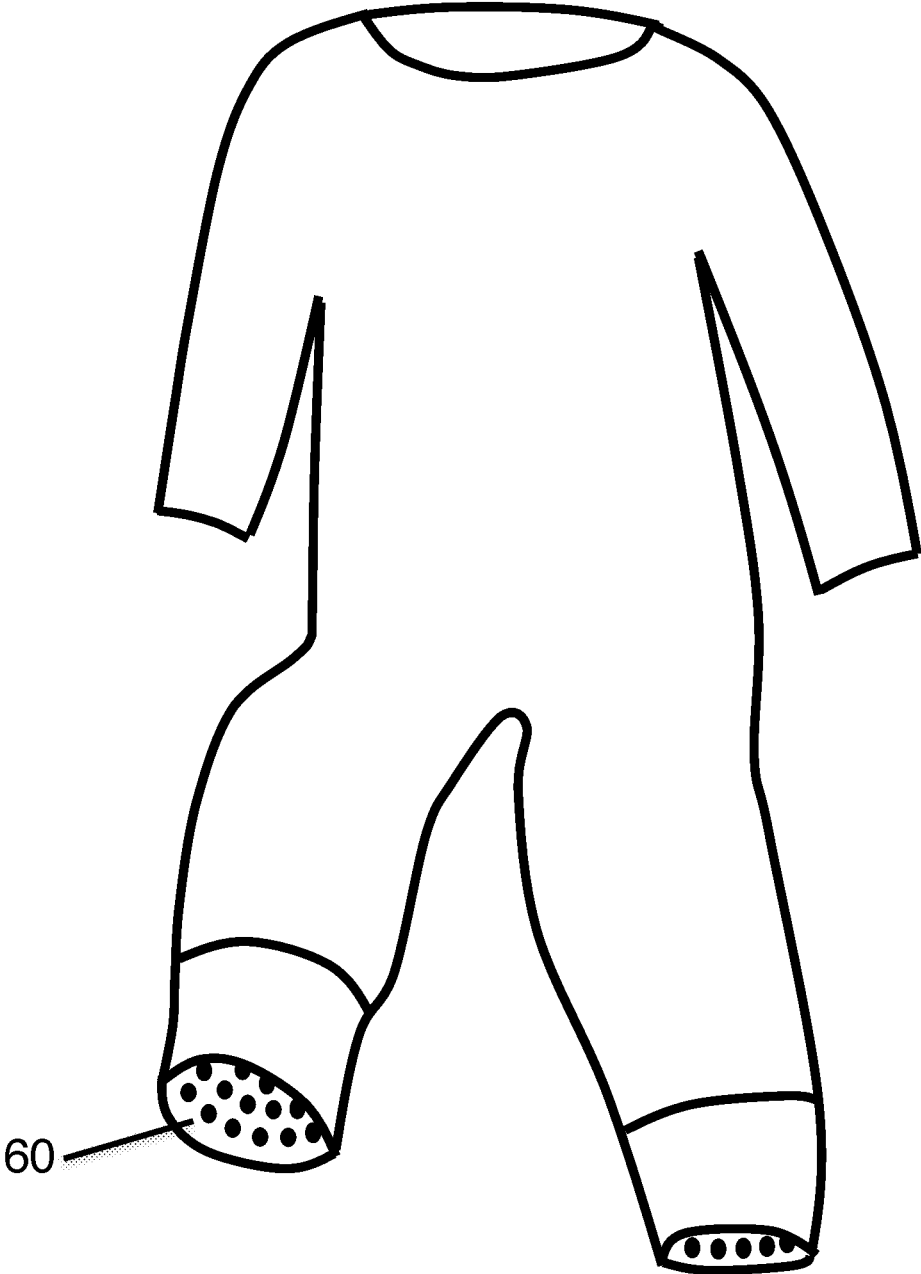
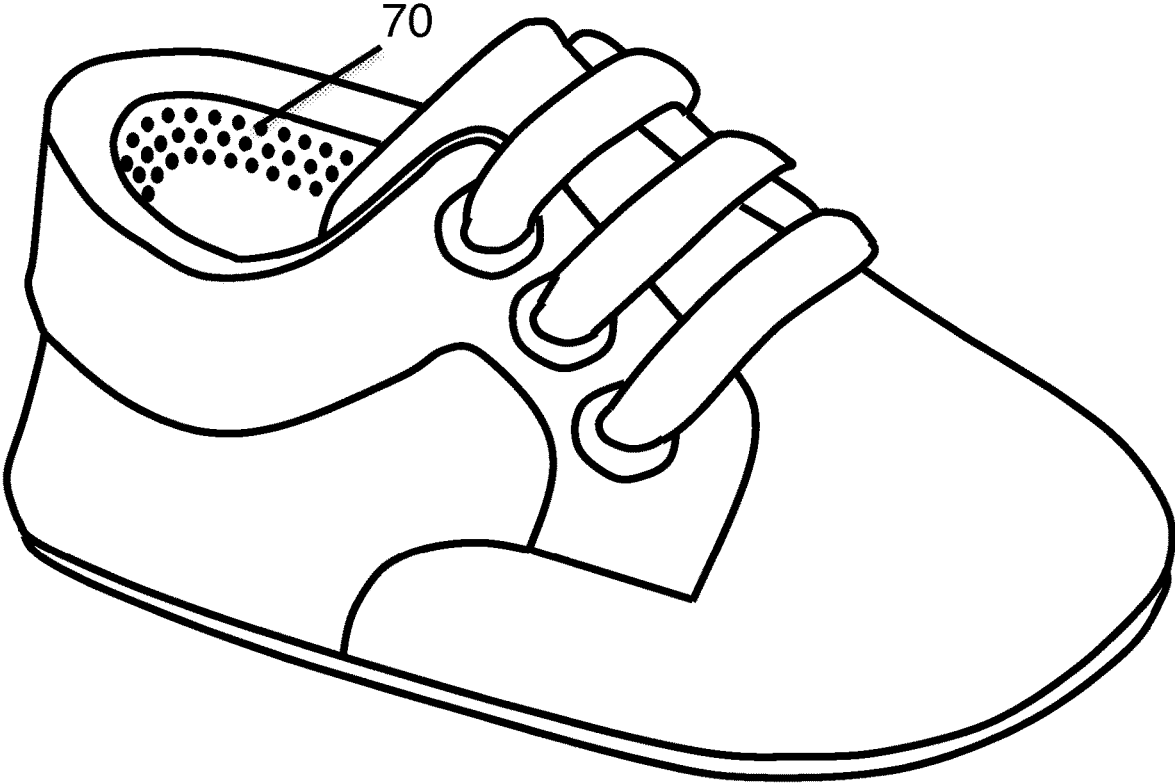


Fig. 6



BABY SOCKS AND RELATED ITEMS WITH IMPROVED IN-PLACE RETENTION

FIELD OF THE INVENTION

[0001] The present invention relates to the field of socks and related items for babies, children, women, and men and more particularly to an improved device for retaining baby socks on a baby's feet, and to socks for children, women, and men.

BACKGROUND OF THE INVENTION

[0002] At the present time there remains an unsolved problem of preventing the socks worn by a baby from coming off of the baby's feet. This problem persists even where the woven material used for baby socks are elasticized (as nearly all baby socks are). Various devices have been proposed in the marketplace, including additional articles of footwear (an outer sock with velcro closure) with the purpose of encasing the baby's socks to hold them in place.

[0003] Unfortunately, the use of an additional encasing article of footwear is not fully convenient, and simple elasticized sock material has proven insufficient to solve the problem as any Internet search for "Why do baby socks always come off?" will quickly reveal.

[0004] There exists then, a need for an improved baby sock that will reduce the instance of the sock coming off the foot while in use. Such a solution must take into account the sensitive nature of a baby's circulatory blood flow at the limb extremities as well as the sensitivity of a baby's skin to vulcanized latex, rubber, or rubber compounds that come into extended contact with a baby's sensitive skin.

[0005] Such an invention, as described herein, would also find application to children's, women's and men's socks in general, but particularly with regard to socks worn for sports, which have a tendency to fall down.

[0006] Similar and related problems of in-place retention exist with baby and children's hats, mittens, the legs of foot-less onesies, bedding, and shoes. Related problems in men's and women's apparel tend to occur in athletic or specialized applications and would also find value from such a solution.

BRIEF SUMMARY OF THE INVENTION

[0007] In one aspect of the present invention, a sock comprising an upper portion that has an elastic property, with said upper portion having areas of silicone or a similar material attached to the interior of said sock arranged at various intervals and protruding by a predetermined amount such that an unequal tension is produced at the points of contact between the areas of silicone and the foot or leg surface of the wearer.

[0008] In a second aspect of the present invention, a sock comprising an upper portion that has an elastic property, with said upper portion having areas of silicone or a similar material attached to the interior of said sock arranged at various intervals and protruding by a predetermined amount such that an unequal tension is produced at the points of contact between the areas of silicone and the foot or leg surface of the wearer where the silicone or similar material is physiologically inert.

[0009] In a third aspect of the present invention, a sock comprising an upper portion that has an elastic property,

with said upper portion having areas of silicone or a similar material attached to the interior of said sock arranged at various intervals and protruding by a predetermined amount such that an unequal tension is produced at the points of contact between the areas of silicone and the foot or leg surface of the wearer where said areas of silicone or similar material are in the shape of dots distributed at intervals around the interior circumference of the sock.

[0010] In another aspect of the current invention, a mitten, hat, or foot-less onesie comprising a main part and one or more openings, wherein said openings comprise at least a portion with elastic properties, and said openings having areas of silicone or a similar material attached to the interior sides of said opening elastic portions arranged at various intervals and protruding by a predetermined amount such that an unequal tension is produced at the points of contact between the areas of silicone and the skin surface of the wearer.

[0011] In another aspect of the current invention, a shoe comprising a main part and upper portion that has an opening, said opening having areas of silicone or a similar material attached to the interior sides of said opening arranged at various intervals and protruding by a predetermined amount such that an unequal tension is produced at the points of contact between the areas of silicone and the skin surface or sock of the wearer.

[0012] In another aspect of the current invention, a shoe comprising a main part and upper portion that has an opening, said opening having areas of silicone or a similar material attached to the interior sides of said opening arranged at various intervals and protruding by a predetermined amount such that an unequal tension is produced at the points of contact between the areas of silicone and the skin surface or sock of the wearer where the silicone or similar material is physiologically inert.

[0013] In another aspect of a the current invention, a shoe comprising a main part and upper portion that has an opening, said opening having areas of silicone or a similar material attached to the interior sides of said opening arranged at various intervals and protruding by a predetermined amount such that an unequal tension is produced at the points of contact between the areas of silicone and the skin surface or sock of the wearer where said areas of silicone or similar material are in the shape of dots distributed at intervals around the interior circumference of the interior of the shoe opening.

[0014] In another aspect of a the current invention, a sheet or mattress pad comprising a main part and corner portions, said corner portions having areas of silicone or a similar material attached to the interior sides of said corner portions arranged at various intervals and protruding by a predetermined amount such that an unequal tension is produced at the points of contact between the areas of silicone and the bottom surface of the mattress at the mattress corners where said areas of silicone or similar material are in the shape of dots distributed at intervals around the interior sides of said sheet or mattress pad corner portions.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] FIG. 1 is an interior view of the front of a pair of socks illustrating the distribution and arrangement of retaining silicon dots according to an aspect of the present invention;

[0016] FIG. 2 is an interior view of the rear of a pair of socks illustrating the distribution and arrangement of retaining silicon dots according to an aspect of the present invention;

[0017] FIG. 3 is exterior view of a hat, rotated vertical to show a portion of the interior near the opening, illustrating the distribution and arrangement of retaining silicon dots according to an aspect of the present invention;

[0018] FIG. 4 is an exterior view of of a mitten, rotated horizontally to show a portion of the interior near the opening, illustrating the distribution and arrangement of retaining silicon dots according to an aspect of the present invention;

[0019] FIG. 5 is a front view of a foot-less onesie, with the leg opening positioned to show a portion of the interior near the opening, illustrating the distribution and arrangement of retaining silicon dots according to an aspect of the present invention;

[0020] FIG. 6 is a side view of top of a shoe, rotated horizontally to show a portion of the interior near the opening, illustrating the distribution and arrangement of retaining silicon dots according to on aspect of the present invention;

DETAILED DESCRIPTION OF THE INVENTION

[0021] The following detailed description is of the best currently contemplated modes of carrying out the invention. The description is not to be taken in a limiting sense, but is made merely for the purpose of illustrating the general principles of the invention, since the scope of the invention is best defined by the appended claims.

[0022] In one embodiment of the invention, depicted in FIG. 1, a sock comprising an upper portion 10 that has an elastic property, with said upper portion having areas of silicone or a similar material shown at 20 and 30 attached to the interior of said sock arranged at various intervals and protruding by a predetermined amount such that an unequal tension is produced at the points of contact between the areas of silicone and the foot or leg surface of the wearer where said areas of silicone or similar material are in the shape of dots distributed at intervals around the interior circumference of the sock and further where the silicone or similar material is physiologically inert.

[0023] As seen at 20 and 30, in the preferred embodiment there is a taper to the arrangement of the silicon dots on each side that provides areas of greater and lesser contact between the wearer's skin and the interior of the sock. In the areas where the silicon dots are located, an unequal and greater pressure upon the wearer's skin is created which causes the friction provided by said silicone dots to grip more tightly.

[0024] In the experimentation leading to the final development of this invention, multiple configurations were tested, with some configurations resulting in irritation or marks on the baby's skin.

[0025] Through this process of experimentation, a configuration was developed resulting in improved holding ability (one which babies are typically unsuccessful in removing), without undue risk of causing irritation or limiting the blood circulation to the baby's limb extremities.

[0026] In this preferred embodiment, where the silicon dots are arranged as shown in FIG. 1 at 20 and 30, the diameter of the silicon dots is approximately 4 mm, with horizontal dot spacing of 6 mm from the center of the dots

in he same row. The preferred embodiment vertical spacing is 5 mm below the row above it. Dot thickness at the thickest point is 1 mm and the sock is a baby's sock.

[0027] In a secondary embodiments of the current invention, the sock may be a child's, women's, or men's sock, a knee sock or a low-rise sock wherein the upper portion of said low-rise sock is coincident with the wearer's foot and does not extend to the ankle.

[0028] In another secondary embodiment of the current invention, a hat as in FIG. 3, uses the three-deep row of protruding silicone dots as in FIG. 1 at 20. In application to the hat, the rows of dots may be unbroken (as in FIG. 3 at 40) around the interior circumference of the hat, or tapered as in FIG. 1 at 20. Tapering of the row pattern and breaks in the pattern of dots will allow the creation of unequal pressure upon the wearer's skin allow better grip at the points of greater pressure.

[0029] In another secondary embodiment of the current invention, a mitten as in FIG. 4, the current invention is applied with regard to the interior of a mitten cuff at 50.

[0030] In another secondary embodiment of the current invention, the current invention is applied to the legs openings 60 of a foot-less onesie as in FIG. 5.

[0031] In another secondary embodiment of the current invention, the current invention is applied to a shoe as in FIG. 6, particularly to the interior of the shoe opening where the foot enters the shoe at 70.

[0032] In a final embodiment of the current invention, the current invention is applied to a sheet or mattress pad, in order to reduce the occurrence of the corners of the sheet or mattress pad coming free from the corners of the mattress. Using the three-deep row of protruding silicone dots as in FIG. 1 at 20, tapered sections of silicone dots are placed at intervals around the interior sides of the corner sections of the sheet or mattress pad, thereby creating areas of unequal pressure against the corners of the mattress.

[0033] Across these secondary embodiments, the placement of the rows of dots may be grouped into areas where dots are present and other areas of the interior side of the garment opening where dots are not present. The areas of groups of dots may have tapered edges as in FIG. 1 at 30, or not.

We claim:

1. A sock comprising:
 - an upper portion that has an elastic property;
 - said upper portion having areas of silicone or a similar material attached to the interior of said sock arranged at various intervals and protruding by a predetermined amount such that an unequal tension is produced at the points of contact between the areas of silicone and the foot or leg surface of the wearer.
2. The sock of claim 1, where the silicone or similar material is physiologically inert.
3. The sock of claim 1, where said areas of silicone or similar material are in the shape of dots distributed at intervals around the interior circumference of the sock.
4. The sock of claim 1, where said sock is a baby sock.
5. The sock of claim 1, where said sock is a child's, women's, or men's sock.
6. The sock of claim 1, where said sock is a knee sock.
7. The sock of claim 1, where said sock is a low-rise sock wherein the upper portion of said sock is coincident with the wearer's foot and does not extend to the ankle.

8. A mitten, hat, or foot-less onesie comprising:
a main part and one or more openings;
wherein said openings comprise at least a portion with an elastic property;
said openings having areas of silicone or a similar material attached to the interior sides of said opening elastic portions arranged at various intervals and protruding by a predetermined amount such that an unequal tension is produced at the points of contact between the areas of silicone and the skin surface of the wearer.

9. The mitten, hat, or foot-less onesie of claim **8**, where the silicone or similar material is physiologically inert.

10. The mitten, hat, or foot-less onesie of claim **8**, where said areas of silicone or similar material are in the shape of dots distributed at intervals around the interior circumference of the mitten, hat, or foot-less onesie opening.

11. A shoe comprising:
a main part and upper portion that has an opening;
said opening having areas of silicone or a similar material attached to the interior sides of said opening arranged at various intervals and protruding by a predetermined amount such that an unequal tension is produced at the points of contact between the areas of silicone and the skin surface or sock of the wearer.

12. The shoe of claim **11**, where the silicone or similar material is physiologically inert.

13. The shoe of claim **11**, where said areas of silicone or similar material are in the shape of dots distributed at intervals around the interior circumference of the sock or foot and leg covering.

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