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(54) **INSULATIVE FOOTWEAR INSERT**

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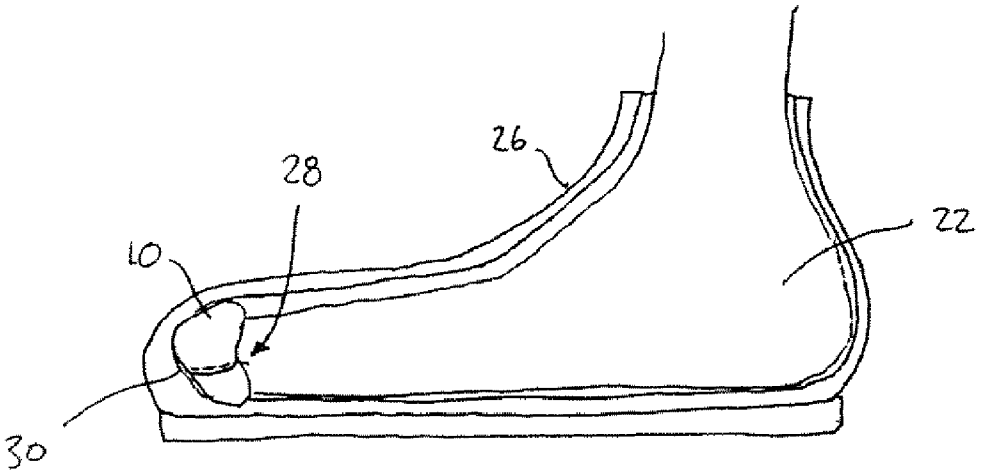
(57) **ABSTRACT**

A footwear insert for insulating a wearer's toes against ambient cold. The insert comprises a deformable outer casing, preferably composed of a fabric such as nylon, the outer casing defining an interior space containing a plurality of insulative beads, such as Styrofoam micro-beads. The insert is configured for insertion into the toe of the footwear, and the wearer's toes are pressed into the insert, thus providing an insulative material adjacent the wearer's toes.



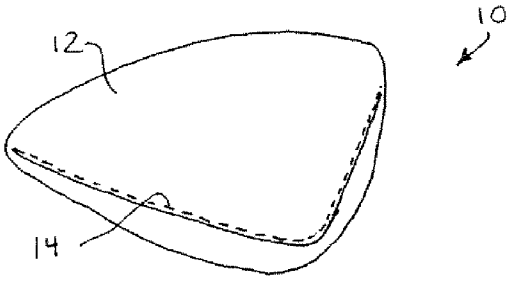


FIG. 1

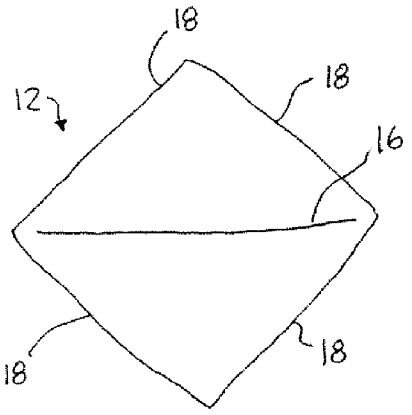


FIG. 2a

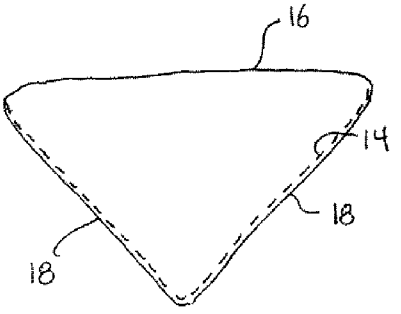


FIG. 2b

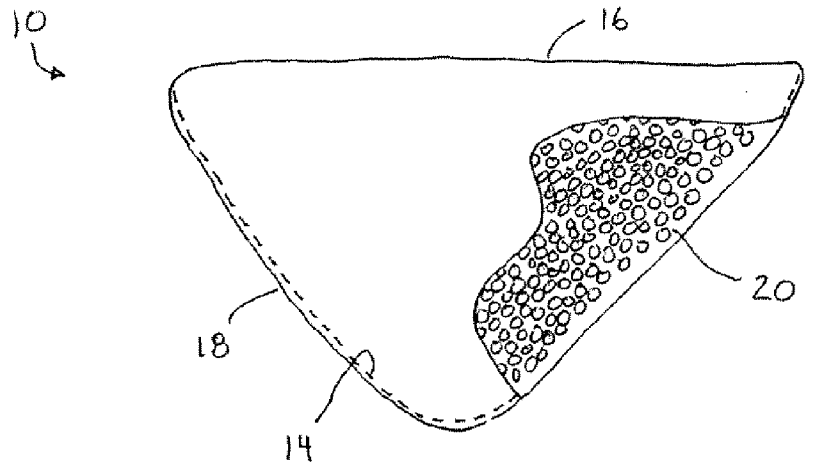


Fig. 3a

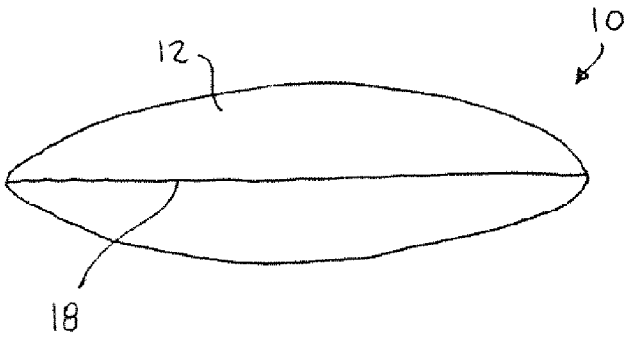


Fig. 3b

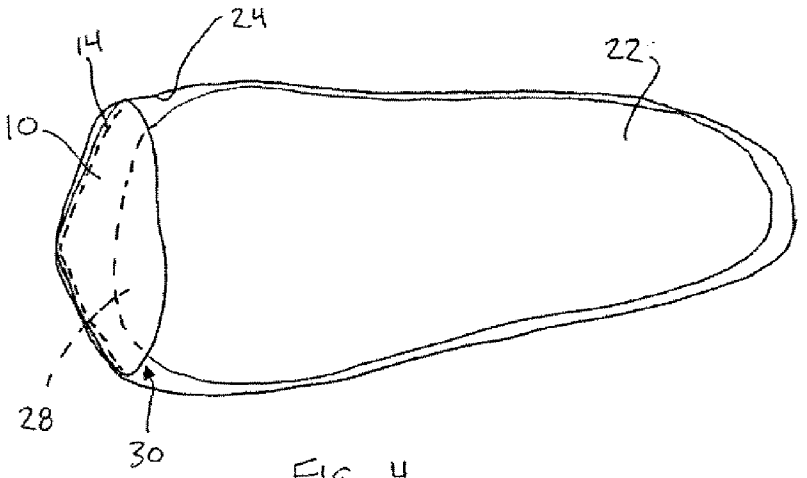


Fig. 4a

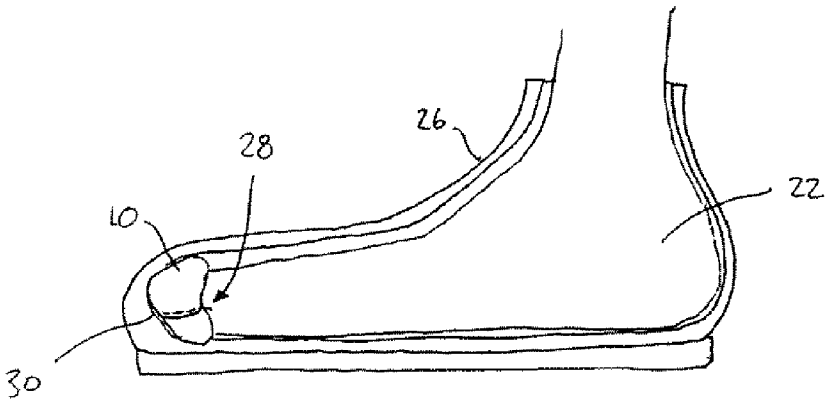


Fig. 4b

INSULATIVE FOOTWEAR INSERT

FIELD OF THE INVENTION

[0001] The present invention relates to techniques for insulating feet against ambient cold, and specifically to such techniques involving footwear modifications.

BACKGROUND OF THE INVENTION

[0002] It is known in locations having relatively cold climates for at least a portion of the year that feet can become cold even in footwear specifically designed for the climate. Whether the footwear comprises ice skates, ski boots or outdoor work boots, it is known that spending time in cold conditions can result in feet becoming undesirably or even dangerously cold. Toes in particular may be susceptible to symptoms such as frostbite.

[0003] Various methods and techniques are commonly employed to address this situation, such as wearing thicker socks or inserting heating pads into the footwear, or even modifying the footwear to include thicker insulative layers.

[0004] However, disadvantages of such conventional solutions are known. For example, the footwear interior may not accommodate thicker socks, heating pads or additional insulative layers. Heating pads also have a limited functional life. While additional insulative layers may have some use with given footwear, they are generally not suitable for use in diverse footwear (e.g. both work boots and ice skates). In addition, conventional solutions may not be useful in keeping the wearer's toes insulated, with the result that the more vulnerable part of the foot may be at risk.

[0005] What is needed, therefore, is a simple product capable of insulating the wearer's toes, and that can be transferred to diverse footwear as desired.

SUMMARY OF THE INVENTION

[0006] The present invention therefore seeks to provide an insert for use in cold-weather footwear, the insert comprising insulative material for positioning adjacent the toes of the wearer.

[0007] According to a broad aspect of the present invention there is provided a footwear insert comprising:

[0008] a deformable outer casing, the outer casing defining an interior space; and

[0009] a plurality of insulative beads within the interior space;

[0010] the insert configured for insertion in the toe region of the footwear.

[0011] The outer casing is preferably but not necessarily composed of a fabric such as nylon. The outer casing should be deformable to conform to the toes of the wearer when the wearer's foot is inserted into the footwear.

[0012] The insulative beads may be composed of any suitable material, but may be expanded polystyrene or Styrofoam™ micro-beads. The size of the insulative beads will depend in part on the interior toe space of the footwear, but may be for one non-limiting example 1-2 mm in diameter. The percentage of the interior space to be filled with the insulative beads can also vary, but may be for one non-limiting example 50-80%.

[0013] The insert is configured for insertion into the interior toe space of the footwear, and the wearer's toes are pressed into the insert, thus providing an insulative material adjacent the wearer's toes.

[0014] A detailed description of an exemplary embodiment of the present invention is given in the following. It is to be understood, however, that the invention is not to be construed as being limited to this embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] In the accompanying drawings, which illustrate an exemplary embodiment of the present invention:

[0016] FIG. **1** is a front perspective view of an insert according to the present invention;

[0017] FIG. **2***a* is a top plan view of an outer casing, unfolded before stitching;

[0018] FIG. **2***b* is a top plan view of the outer casing, folded and stitched;

[0019] FIG. **3***a* is a top plan view of the insert, partially cut away to show the insulative beads;

[0020] FIG. **3***b* is a front elevation view of the insert;

[0021] FIG. **4***a* is a simplified top plan view of a foot in footwear, showing positioning of the insert adjacent the toes; and

[0022] FIG. **4***b* is a simplified side elevation view of a foot in footwear, cut away to show the toes pressed into the insert in the toe region of the footwear interior.

[0023] An exemplary embodiment of the present invention will now be described with reference to the accompanying drawings.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENT

[0024] Throughout the following description specific details are set forth in order to provide a more thorough understanding to persons skilled in the art. However, well known elements may not have been shown or described in detail to avoid unnecessarily obscuring the disclosure. The following description of an example of the invention is not intended to be exhaustive or to limit the invention to the precise forms of any exemplary embodiment. Accordingly, the description and drawings are to be regarded in an illustrative, rather than a restrictive, sense.

[0025] Turning to FIG. **1**, an insert **10** according to the present invention is illustrated in front perspective view. The insert **10** comprises an outer casing **12** of roughly triangular shape when viewed from above, with stitching **14** along two sides (as described below). The outer casing **12** comprises a flexible, deformable material, which in the exemplary embodiment is nylon. The outer casing **12** is deformable so that the wearer's toes can be pressed into it, as described below. Nylon is art advantageous material, as it is not only deformable but also does not retain undesirable moisture during use.

[0026] The triangular shape of the insert **10** is not necessarily inherent to all embodiments of the present invention. Rather, it is the result of the method of construction of the exemplary embodiment. As can be seen in FIGS. **2***a* and **2***b*, the method of constructing the insert **10** begins with the outer casing **12**, which starts in a flat, square, unfolded orientation, with a fold line **16** positioned diagonally between two corners and the four edges **18** intended for stitching together. While various sizes of outer casing **12** can be used, one exemplary size suitable for some adult footwear is 5 inches×5 inches square. The outer casing **12** is then folded in half along the fold line **16**, and stitching **14** is provided along the edges **18**. Stitching of the edges **18** results in an interior space within the

now roughly triangular outer casing **12**, which is intended for receipt of a filling described below.

[0027] Turning to FIG. **3***a*, a view of a filled insert **10** is shown, with the outer casing **12** partially cut away to show the filling. In this exemplary embodiment the filling is expanded polystyrene micro-beads **20**, which may be Styrofoam™. The filling, however, may be any suitable closed cell foam or any other filling that has the desirable insulative properties while providing comfort to the wearer. As will be obvious, the stitching of the edges **18** should not be fully completed until the micro-beads **20** have been inserted into the interior space within the insert **10**.

[0028] Once filled with the micro-beads **20**, the insert **10** will have a padded appearance, as can be seen in FIG. **3***b*. As it will be desirable in most cases to have an insert **10** that not only provides insulative protection to the wearer's toes but also is comfortable during use, it is preferable to not fill the outer casing **12** to its maximum internal capacity. Rather, the outer casing **12** should be filled with enough micro-beads **20** to maintain the desirable flexibility and deformability, which it will be understood may vary from one context to another. Also, an over-filled insert **10** might not fit easily into the toe region of the footwear, as described below.

[0029] Turning now to FIGS. **4***a* and **4***b*, the method of using the insert **10** is illustrated. FIG. **4***a* provides a simplified top plan view of a wearer's foot **22** inside footwear interior walls **24**. The insert **10** is positioned in the interior toe space **30** within the footwear interior walls **24**. The insert **10** is pressed into the toe space **30**, with the stitched edges **18** first; the stitching **14** will thus be spaced from the wearer's toes **28** and potentially enhance comfort of use.

[0030] FIG. **4***b* shows the wearer's foot **22** in the footwear **26**. As can be seen, the insert **10** would first be inserted into the toe space **30**, with the stitching **14** against the footwear interior walls **24**. The wearer's foot **22** would then be inserted into the footwear **26**, the toes **28** pressing against the fold line **16** of the insert **10**. Given the deformability of the insert **10**, the toes **28** would press into and slightly under the rearward edge (the fold line **16** edge) of the insert **10**.

[0031] With the toes **28** partially pressed into the insert **10** and partially pressed under the insert **10**, the toes **28** are provided with desirable insulation against ambient cold conditions.

[0032] There are thus numerous advantages inherent in one or more embodiments of the present invention. For example, the wearer need not rely on thicker socks or heating pads, which may not fit in the footwear interior. Unlike heating pads, inserts in accordance with the present invention could be used and re-used for a long period of time. Also, unlike additional insulative layers, inserts in accordance with the present invention may be used with diverse footwear, as they can be deformed to fit different sizes and shapes of footwear interiors. In addition, inserts in accordance with the current invention are particularly well-suited for use in keeping the wearer's vulnerable toes insulated.

[0033] As will be clear from the above, those skilled in the art would be readily able to determine obvious variants capable of providing the described functionality, and all such variants and functional equivalents are intended to fall within the scope of the present invention.

[0034] Specific examples have been described herein for purposes of illustration. These are only examples. The technology provided herein can be applied to contexts other than the exemplary contexts described above. Many alterations, modifications, additions, omissions and permutations are possible within the practice of this invention. This invention includes variations on described embodiments that would be apparent to the skilled person, including variations obtained by: replacing features, elements and/or acts with equivalent features, elements and/or acts; mixing and matching of features, elements and/or acts from different embodiments; combining features, elements and/or acts from embodiments as described herein with features, elements and/or acts of other technology; and/or omitting combining features, elements and/or acts from described embodiments.

[0035] The foregoing is considered as illustrative only of the principles of the invention. The scope of the claims should not be limited by the exemplary embodiment set forth in the foregoing, but should be given the broadest interpretation consistent with the specification as a whole.

1. A footwear insert for insertion in a toe region of a footwear, the footwear insert comprising:
- a deformable outer casing, the outer casing defining an interior space; and
- a plurality of insulative beads within the interior space;
- wherein the insert is configured for insertion in the toe region of the footwear.

2. The footwear insert of claim **1** wherein the deformable outer casing is composed of nylon.

3. The footwear insert of claim **1** wherein the deformable outer casing is deformable to conform to toes of a wearer when the wearer's foot is inserted into the footwear.

4. The footwear insert of claim **1** where the plurality of insulative beads is composed of expanded polystyrene or Styrofoam™ micro-beads.

5. The footwear insert of claim **1** wherein the percentage of the interior space to be filled with the insulative beads is 50-80%.

6. The footwear insert of claim **1** wherein the deformable outer casing is substantially triangular in shape.

7. A method for providing a footwear insert for insertion in a toe region of a footwear, the method comprising the steps of:
- providing a square flat outer easing;
- folding in half the square flat outer casing along a fold line positioned diagonally between two diagonally opposed corners of the outer casing, producing a substantially triangular outer casing;
- partially stitching edges of the folded outer casing to form an interior space within the substantially triangular outer casing;
- inserting a plurality of insulative beads into the interior space; and
- completing stitching of the edges to seal the interior space.

8. The method of claim **7** wherein the insulative beads are selected to be of a volume sufficient to maintain a desirable flexibility and deformability of the footwear insert.

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