



US 20080098617A1

(19) **United States**
(12) **Patent Application Publication**
Garrett

(10) **Pub. No.: US 2008/0098617 A1**
(43) **Pub. Date: May 1, 2008**

(54) **FOOT ANTI-CONTAMINATION BARRIER
MEMBRANE STRUCTURE**

Publication Classification

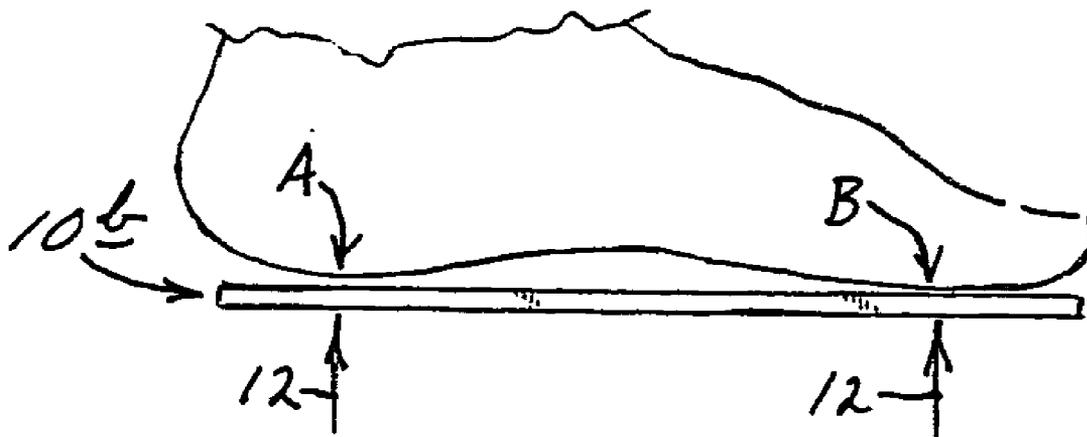
(76) Inventor: **Arlene I. L. Garrett**, Gresham, OR
(US)

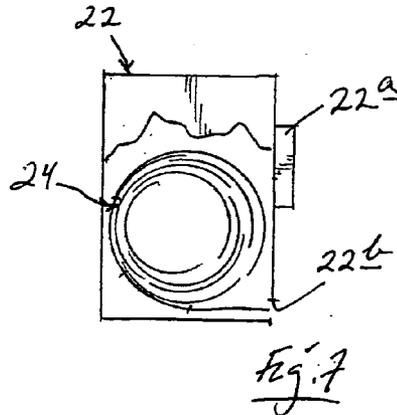
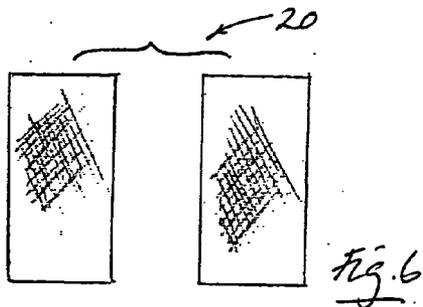
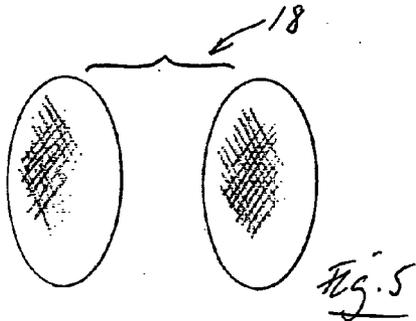
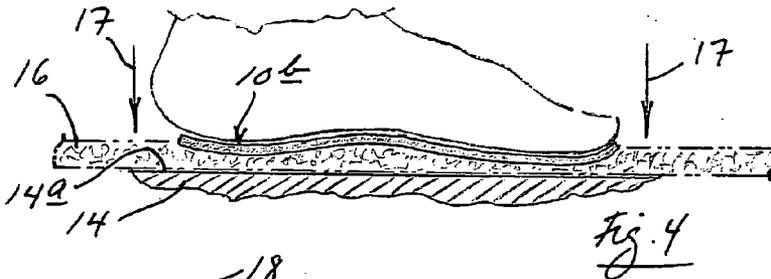
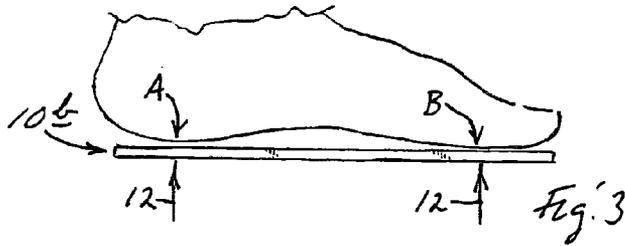
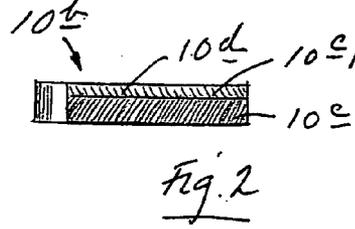
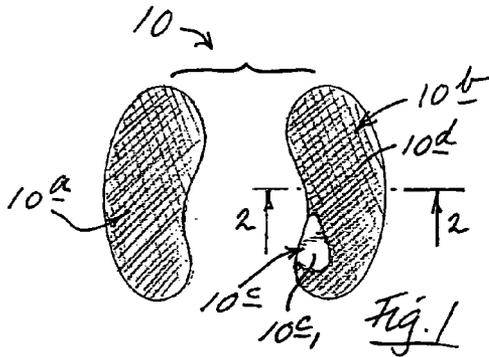
(51) **Int. Cl.**
A43B 3/12 (2006.01)
A43B 19/00 (2006.01)
A63B 71/12 (2006.01)
(52) **U.S. Cl.** **36/11.5; 36/106; 36/71**

Correspondence Address:
ROBERT D. VARITZ, P.C.
4915 SE 33RD PLACE
PORTLAND, OR 97202

(57) **ABSTRACT**
Disposable, anti-pathogen, anti-contamination barrier membrane structure characterized with drape, and adapted to be interposed the sole of the foot and a walking surface including (a) gossamer-thin, flexible, pathogen-blocking, sheet-like barrier material having an adhesion face, placeable, adhesively and removably, with light pressure, onto, and fully covering, from a perimetral point of view, the sole of a person's foot, and (b) low-tack, re-positionable adhesive structure resident on the adhesion face.

(21) Appl. No.: **11/588,773**
(22) Filed: **Oct. 27, 2006**





**FOOT ANTI-CONTAMINATION BARRIER
MEMBRANE STRUCTURE**

**BACKGROUND AND SUMMARY OF THE
INVENTION**

[0001] At commercial airports distributed around the United States and elsewhere in the world, ticketed passengers are now routinely subjected to a regular security screening process before they are permitted to enter the relevant boarding-gate concourses. This screening process now almost routinely either requires, or strongly encourages, that, before a person passes through a personnel security-screening gate, that person's shoes be removed, with such shoes, and other passenger-carried items, being directed independently through a weapons and contraband scanning tunnel on a conveyor belt which collects these items typically at a point which is some distance, perhaps several yards, away from where they are ultimately returned to their owning passengers. With regard to many people who are airline passengers, objections and concerns have arisen, and have been voiced, regarding the fact that, when shoes are removed in safety-screening areas, with the result that people must then committedly walk substantially or actually barefooted on the safety-screening area floor (carpeted or not), there is a potential for floor contact foot exposure to pathogenic contaminants which could cause illness.

[0002] The present invention addresses this concern in a unique and a very simple manner. This manner focuses attention on providing such passengers, for completely temporary, and indeed throw-away, use during such a security-screening process, very thin, and indeed gossamer-thin, anti-pathogen-contamination, sheet-like barriers which have a low-tack, repositionable adhesive applied to one side to allow them to be placed temporarily by adhesion directly onto the undersides (the soles) of shoeless feet. These adhesively applied, temporary barriers, once so applied, may then be worn through a security screening area, whereby the bottoms of feet, and stockings and socks, never come directly into contact with a potentially pathogen-contaminated floor surface.

[0003] Preferably, these thin underfoot barriers are constructed so that they will adhere relatively tenaciously during the short periods of time that they are worn and walked upon, and that they have structural qualities which allow them, despite their preferable gossamer characteristic, to stay intact during short periods of use, and also to stay relatively well adhered to the bottoms of feet, stockings, etc. during use.

[0004] After such short-term use, they are easily and quickly removed because of the low-tack characteristic of the adhesive with which they are preferably equipped.

[0005] Also, the specific material forming this barrier structure should be such that it will confidently prevent true contamination with respect to any pathogenic contaminant which might be picked up from foot/stocking/sock contact with the floor surface where they are used.

[0006] These and other features and advantages of this invention will become more fully apparent as the description which now follows is read in conjunction with the accompanying drawings.

DESCRIPTION OF THE DRAWINGS

[0007] FIG. 1 is a top plan view of a pair of barrier sheets made in accordance with a preferred embodiment of the

invention, shaped with respective left-foot/right-foot perimetral outline configurations.

[0008] FIG. 2 is an enlarged cross section taken generally along the line 2-2 in FIG. 1 (through the right-foot barrier sheet shown in FIG. 1).

[0009] FIG. 3 is a fragmentary and simplified side elevation generally illustrating quick adhesion application of one of the barrier sheets of FIGS. 1 and 2 to the underside (sole) of a foot from which a shoe has been removed.

[0010] FIG. 4 illustrates a point in time slightly later than that which is illustrated in FIG. 3, and specifically shows how, when the now barrier-guarded foot lowers into contact with the airport concourse floor (in this illustration shown as a carpeted floor), the gossamer and drapery nature of the barrier sheet causes it to form and reshape itself to provide intimate adhesion contact with the sole of the foot—a feature of the invention which promotes successful use of a low-tack, repositionable adhesive without creating a situation where an applied barrier shape is likely to break away from the foot sole during a short period of use.

[0011] FIGS. 5 and 6 are similar to FIG. 1, except that they show two different perimetally shaped barrier sheets made in accordance with modified forms of the invention. In other respects, these barrier sheets are essentially the same in construction as the barrier sheets illustrated in FIGS. 1-4, inclusive.

[0012] FIG. 5 is a very simplified and schematic side elevation, with structural portions broken away, illustrating one type of coin, or card, operated vending dispenser which may be provided close to the point of intended use along an airport concourse for vending barrier sheets made in accordance with the invention.

**DETAILED DESCRIPTION OF THE
INVENTION**

[0013] Turning attention now to the drawings, and referring first of all to FIGS. 1 and 2, illustrated generally at 10 in FIG. 1 is pair of foot barrier sheets 10a, 10b which, as illustrated in FIG. 1, have perimetral outlines that possess essentially left-foot and right-foot outlines, respectively. The "toe ends" of these sheets are shown pointing upwardly in FIG. 1. Barrier sheet 10b, which is to be applied to the underside (sole) of the right foot of a user, is shown in cross section in FIG. 2 on a scale which is significantly larger than that employed in FIG. 1. FIG. 2 specifically illustrates that each of these barrier sheets is formed with an underlayer, preferably, of a gossamer-thin, flexible and drapery sheet material, such as the commercially available material sold under the trademark Tyvek® 10c, the upper surface, or face, 10c₁ of which, i.e., the intended foot-attaching adhesion surface, or face, being suitably coated with what is known as a low-tack, repositionable adhesive film 10d. The adhesive making up film 10d is preferably very much like the low tack, repositionable adhesive employed on the well-known product made by 3M sold under the trademark Post It®.

[0014] A preference for gossamer thinness in the basic material of the foot barrier sheet of this invention is important for several reasons. First of all, substantial thinness minimizes the amount of material which is employed in the structure of such a sheet, and thus minimizes manufacturing cost and acceptable sale price. Such gossamer thinness also cooperates with the use of the mentioned low-tack, repositionable adhesive, whereby, when a sheet has been applied to the underside of a foot, and then stood upon, the sheet

tends to deform quite easily to increase the foot-sole bonding-surface area by deforming readily on the underside of a foot, thereby bringing a larger surface area of the coating adhesive into contact with either the bare bottom of the foot, or a stocking or a sock.

[0015] Another important consideration, of course, is that the specific material chosen for use is one which truly will act as a barrier to pathogenic contamination regarding anything stood upon during use of the sheet.

[0016] A further important consideration is that, despite its thinness, the basic barrier sheet material must have enough structural strength so as not to come apart, to shred, or to tear during short periods of use. This consideration is probably best met by a material which includes internal reinforcing fibers.

[0017] The mentioned Tyvek® commercially available product is quite suitable in all of these regards. It is also available in relatively quite thin expanses having a thickness which may preferably lie in the range of about 3-mils to about 6-mils.

[0018] The adhesive coating, such as coating, or film, **10d**, which is applied to the intended upper surface (adhesion face **10c₁**) of a barrier sheet made in accordance with the present invention may be applied in any suitable manner, such as by spraying, by roll-coating, etc. And, as was mentioned earlier herein, this adhesive also preferably lies in the category of adhesives known as re-positionable, low-tack adhesives, such as that which is employed in the earlier-mentioned Post It® product made by 3M.

[0019] Where barrier sheets are made specifically shaped for left-foot and right-foot use, it is, of course, important that the distributed adhesive lie on the appropriate side for left-foot, and right-foot applications.

[0020] When barrier sheets, like those shown in FIGS. **1** and **2**, are ready for use, they are quickly applied, as is generally indicated by arrows **12** in FIG. **3**, to the underside (the sole) of a shoe-free foot, by quickly and gently “slapping” the sheets into place. Initial contact with the foot sole is likely to create only a limited amount of adhesion area contact, and this condition is illustrated quite clearly in FIG. **3** at A and B.

[0021] When, as illustrated by arrows **17** in FIG. **4**, a user steps down onto a floor surface, such as the airport security-screening floor surface shown at **14a** for floor **14** in FIG. **4**, a surface which, in this figure, is covered with a carpet, such as that shown at **16**, the region of compression between the floor carpet and the underside of a foot causes a natural deformation to occur in the applied barrier sheet, whereby the area of adhesion contact with the foot increases substantially. This condition is shown very clearly in FIG. **4** in the drawings, and is of course promoted by the quality of gossamer thinness preferably present in the foot-applied barrier sheets of the invention.

[0022] A similar situation of increased adhesion-contact area between an attached barrier sheet and the sole of a foot occurs when what is stepped down upon by a foot is an uncarpeted surface structure. This is true because of compression flattening of the foot sole which takes place under such a circumstance to enlarge the sole/barrier-sheet contact interface.

[0023] With the barrier sheets of this invention thus adhesion-applied as just discussed, the wearer walks through the security screening area with that wearer’s feet essentially completely protected against pathogen through-contamination from the floor. When the wearer regains possession of

removed shoes, the barrier sheets are quickly, easily and carefully (in order to avoid contact with any contaminant) peeled away in favor of putting one’s shoes back on, and the used barrier sheets are then preferably thrown away. Whether not a user elects to keep these sheets for possible future use is purely a matter of user choice, though it should be understood that they are intended to be treated as single-use, discardable products, inasmuch as, once used, they may well have picked up an unwanted contaminant.

[0024] In FIGS. **5** and **6**, two modified forms of barrier sheets are shown generally at **18**, **20**, respectively. The two sheets shown at **18** in FIG. **5** have an elongate, ovate shape, whereas the different sheets shown at **20** in FIG. **6** have an elongate, rectangular shape.

[0025] What will be noticed immediately about the invention modifications shown in FIGS. **5** and **6** is that the sheets shown here do not possess a left-foot/right-foot characteristic, and this means that only a single sheet shape is required. Additionally, the rectangular sheets shown at **20** in FIG. **6**, because of their rectangularity, probably make the most economic use of the basic bulk sheet material from which these sheets are preferably made. In other words, if a foot barrier sheet is to be cut from a starting sheet of bulk material, the sheet illustrated in FIG. **6** can be produced leaving little or no waste material.

[0026] There are many ways in which foot barrier sheets made in accordance with this invention may be sold or vended to a user, and FIG. **7** (below discussed) illustrates, very simply and schematically, one of such ways. These sheets may preferably be made purchasable directly within airports, and even at locations therein which are immediately adjacent where passenger security screening takes place.

[0027] In FIG. **7**, a coin-operated, or credit-card-operated, vending machine is shown generally at **22**, with this machine being provided with a suitable and conventional payment-input structure pictured generally at **22a**. In the dispensing approach illustrated in this figure, individual, or side-by-side pairs of, foot barrier sheets are dispensed through a machine opening **22b** from a vending coil **24** which is elongate, and which includes a large plurality of vendible sheets.

[0028] Thus, the present invention provides a very simple, unique, and elegant anti-contamination, anti-pathogen, foot barrier sheet, (a) suitable for convenient and very effective throw-away use, (b) structured of a material which can quickly and easily be adhered (for later simple removal) to the underside of a foot, and (c) capable of providing positive anti-contamination barriering as described earlier herein. These sheets may be made of relatively inexpensive material which is lightweight enough to have the quality of gossamer thinness for the reasons stated above. The specific sheet material employed preferably not only will function well as a anti-contamination barrier for the underside of a foot, but it will also be sufficiently strong, as by possessing internal reinforcing fibers, so that it will “hang together” during the expected very brief periods of underfoot wearing use.

[0029] Accordingly, while a preferred embodiment, and certain of modifications, of the present invention have been described herein, it is appreciated that variations and modifications may be made without departing from the spirit of the invention.

I claim:

1. Disposable, anti-pathogen, anti-contamination barrier membrane structure characterized with drape, and adapted to be interposed the sole of the foot and a walking surface comprising

gossamer-thin, flexible, pathogen-blocking, sheet-like barrier material having an adhesion face, placeable, adhesively and removably, with light pressure, onto, and fully covering, from a perimetral point of view, the sole of a person's foot, and

low-tack, re-positionable adhesive structure resident on said adhesion face.

2. The barrier membrane structure of claim 1, wherein said barrier material is a fiber-containing material.

3. The barrier membrane structure of claim 1, wherein said barrier material has a thickness preferably in the range of about 3-mils to about 6-mils.

4. The barrier membrane structure of claim 1, wherein said barrier material is formed of a material selected from the group including (a) paper, (b) plastic, and (c) a material possessing polyethylene fibers.

5. A method for preventing contact pathogen contamination of the soles of bare, or stocking-clad, or sock-clad, feet with respect to walking contact with public walking surfaces, including

adhesively and removably placing, with light pressure, an adhesion-prepared, sheet-like, pathogen-blocking barrier membrane structure onto the sole of each foot, enabling treading across a public walking surface with the feet wearing such sole-adhered barrier membrane structure,

removing the barrier membrane structure from the feet after a wearer-selected, short period of such treading, and

optionally disposing of the thus-used and removed barrier membrane structure.

6. A method for creating an anti-contamination barrier membrane structure which is removably attachable to the sole of the foot comprising

choosing a gossamer-thin, anti-contamination, barrier-membrane sheet material,

selecting a perimetral outline for a foot barrier membrane structure which is to be made from the chosen sheet material,

creating, from the such chosen material a two-faced barrier membrane structure having the selected outline, and

applying a low-tack, re-positionable adhesive to one of the two faces of the thus-created barrier membrane structure.

* * * * *