

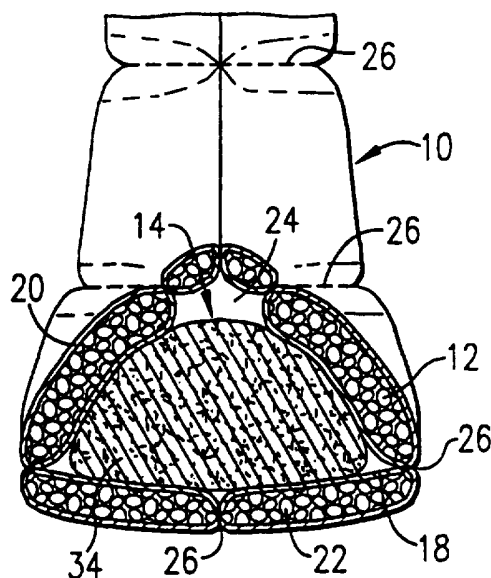
**PCT**WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup> :</b> <b>F26B 25/00, 19/00, A43B 3/10</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 97/15796</b> <b>(43) International Publication Date:</b> 1 May 1997 (01.05.97)
<b>(21) International Application Number:</b> PCT/US96/16612 <b>(22) International Filing Date:</b> 18 October 1996 (18.10.96)  <b>(30) Priority Data:</b> 08/548,280 25 October 1995 (25.10.95) US  <b>(71) Applicant:</b> SHOUSE FINANCIAL CORPORATION [US/US]; 906 Grand Boulevard, Kansas City, MO 64106-2039 (US).  <b>(72) Inventors:</b> SHOUSE, Elizabeth, J.; 11701 Hadley, Overland Park, KS 66210 (US). SHOUSE, Ronald, W.; 11701 Hadley, Overland Park, KS 66210 (US).  <b>(74) Agent:</b> WERESH, John, A.; Hovey, Williams, Timmons & Collins, Suite 400, 2405 Grand Boulevard, Kansas City, MO 64108 (US).		<b>(81) Designated States:</b> CA, JP, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report.</i>

**(54) Title:** FOOTWEAR DRYING INSERT**(57) Abstract**

A footwear drying insert includes an elongated foot-shaped body defining opposing toe and heel ends and including tubular inner and outer layers of material that are secured together to define an intermediate space between the layers and an interior space within the inner tubular layer. A plurality of baffles (26) are formed between and connect the inner (18) and outer (20) layers of the body together. The baffles extend in a direction generally parallel to the longitudinal axis between the toe and heel ends of the body to divide the intermediate space into compartments. A desiccant composition (12) is enveloped within at least one compartment, and structure is provided for exerting outward support on the body during use. The support structure is compressible to allow the insert to be deformed for the insertion and removal from the footwear.



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AM	Armenia	GB	United Kingdom	MW	Malawi
AT	Austria	GE	Georgia	MX	Mexico
AU	Australia	GN	Guinea	NE	Niger
BB	Barbados	GR	Greece	NL	Netherlands
BE	Belgium	HU	Hungary	NO	Norway
BF	Burkina Faso	IE	Ireland	NZ	New Zealand
BG	Bulgaria	IT	Italy	PL	Poland
BJ	Benin	JP	Japan	PT	Portugal
BR	Brazil	KE	Kenya	RO	Romania
BY	Belarus	KG	Kyrgyzstan	RU	Russian Federation
CA	Canada	KP	Democratic People's Republic of Korea	SD	Sudan
CF	Central African Republic	KR	Republic of Korea	SE	Sweden
CG	Congo	KZ	Kazakhstan	SG	Singapore
CH	Switzerland	LI	Liechtenstein	SI	Slovenia
CI	Côte d'Ivoire	LK	Sri Lanka	SK	Slovakia
CM	Cameroon	LR	Liberia	SN	Senegal
CN	China	LT	Lithuania	SZ	Swaziland
CS	Czechoslovakia	LU	Luxembourg	TD	Chad
CZ	Czech Republic	LV	Latvia	TG	Togo
DE	Germany	MC	Monaco	TJ	Tajikistan
DK	Denmark	MD	Republic of Moldova	TT	Trinidad and Tobago
EE	Estonia	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	UG	Uganda
FI	Finland	MN	Mongolia	US	United States of America
FR	France	MR	Mauritania	UZ	Uzbekistan
GA	Gabon			VN	Viet Nam

## FOOTWEAR DRYING INSERT

### BACKGROUND OF THE INVENTION

#### Field of the Invention

The present invention relates in general to apparatus for drying the interior of footwear. In particular, the present invention relates to an insert for placement  
5 within footwear, especially snow ski boots, which will capture moisture and thus dry the footwear.

#### Description of the Prior Art

The accumulation of moisture within the interior of footwear due to perspiration by the wearer has long been a problem. Certain types of footwear are  
10 also quite prone to accumulation of moisture in addition to that due to perspiration. For example, hiking boots may receive water from a lake or stream into their interior, and it is common for ski boots to accumulate moisture from melted snow. This moisture causes the wearer's feet to become excessively cold, promotes the growth and spread of bacteria harmful to humans and/or footwear, and reduces the  
15 wearer's comfort.

It is known to remove perspiration moisture during use of the shoe by employing an inner sole having a moisture removing agent, as exemplified in U.S. Patent No. 2,713,214. However, while such inner soles are serviceable for drying  
20 some perspiration moisture, they do not provide sufficient moisture removal capabilities to maintain the user's feet dry upon ingress of additional moisture, as noted above. To eliminate such large amounts of moisture, it has been known to provide various devices for providing heat and/or an airstream to the interior of the footwear once the footwear has been removed from the user. Examples of such  
25 devices are shown in U.S. Patent Nos. 2,710,905; 3,417,482; 4,768,293; and 5,003,707. Each of these devices suffers from the drawback that it requires electrical power for operation, and additionally is limited in effectiveness due to the difficulties in maintaining a proper flow of air within the closed cavity of the footwear or boot. They are also relatively expensive, relatively complicated, relatively heavy and relatively slow.

**SUMMARY OF THE INVENTION**

An object of the present invention is to provide a novel device which may remove large amounts of moisture from the interior of footwear while such footwear is not in use, with such drying being uniform throughout the article of footwear.

5 Another object of the present invention is to provide such a device which will make the footwear more comfortable to the wearer, last longer, and avoid promotion or growth of bacteria and the transmission of same in rental footwear.

10 Another object of the present invention is to provide such a device which does not require electrical power, and the complications associated therewith, and which is extremely safe to the user and to the article of footwear.

Another object of the present invention is to provide such a device which is of simple construction and use, and which is inexpensive.

Another object of the present invention is to provide such a device which is safe and easy to store, and will not be subject to mechanical or electrical failure.

15 Another object of the present invention is to provide such a device which is quiet, efficient and effective, drying the footwear in times comparable to, or faster than, prior art devices.

20 Another object of the present invention is to provide such a device which employs a desiccant composition, which composition will allow the device to be used, and possibly reused, many times.

Another object of the present invention is to provide such a device which will allow the moisture to enter the device, but will safely retain the desiccant composition therein, and which will not harm the article of footwear.

25 Another object of the present invention is to provide such a device which includes an indicator to allow the user to determine when the desiccant material has reached its absorption limit, and must be discarded or regenerated.

30 In accordance with these and other objects evident from the following description of a preferred embodiment of the invention, a footwear drying insert is provided which includes a foot-shaped body, a desiccant composition enveloped within the body, and a support means for providing outward support of the body during use. The body is elongated, defining opposing toe and heel ends and a

longitudinal axis extending between the ends. The body includes tubular inner and outer layers of material that are secured together to define an intermediate space between the layers and an interior space within the inner tubular layer. A plurality of baffles are formed between and connect the inner and outer layers of the body together. The baffles extend in a direction generally parallel to the longitudinal axis between the toe and heel ends of the body to divide the intermediate space into compartments. The desiccant composition is preferably enveloped within at least one of the compartments, and the support means is provided in the interior space of the body. The support means is compressible to allow the insert to be deformed for insertion into and removal from the footwear.

By providing a construction in accordance with the present invention, numerous advantages are realized. For example, by providing a footwear drying insert having an elongated foot-shaped body including inner and outer tubular layers defining a compartmentalized intermediate space, it is possible to fill the intermediate space with a desiccant composition without the need for stuffing the entire body with such composition. In addition, by providing a support means for exerting outward support of the body during use, the desiccant material in the intermediate space is retained in close proximity to the interior surface of the footwear during use, facilitating drying of the footwear. By employing a support means that is compressible, insertion of the insert into and its removal from the footwear is facilitated.

Another advantage obtained from the use of the present invention results from employing a plurality of baffles between the inner and outer layers of body material such that the desiccant composition is supported within the compartments and is not allowed to clump or collect at one end or the other of the drying insert.

## BRIEF DESCRIPTION OF THE DRAWING FIGURES

The invention is described in detail below with reference to the preferred embodiment illustrated in the attached drawing figures, wherein:

Fig. 1 is a side elevational view of a footwear drying insert constructed in accordance with the preferred embodiment;

Fig. 2 is a sectional view taken along line 2-2 of Fig. 1; and

Fig. 3 is a sectional view similar to Fig. 2, illustrating an alternate embodiment of the present invention.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A footwear drying insert constructed in accordance with the preferred embodiment is illustrated in Fig. 1, and is designed for use in removing moisture from an article of footwear such as a ski boot, hiking boot, ice or roller skate, or any other type of footwear that is exposed to moisture during use due to perspiration of the wearer or to ambient conditions. Such footwear typically includes a sole, an upper connected to the sole to define an interior space and an opening through which the wearer's foot is received. The interior space includes a forward toe portion, a heel portion behind the toe portion, and an ankle or shank portion extending upward from the heel portion. Where the footwear is of a high-top or boot variety, the opening is spaced further from the sole than is the case with a regular shoe or other low-top footwear.

With reference to Fig. 2, the insert generally includes a foot-shaped body 10, a desiccant composition 12 enveloped within the body, and a support means 14 for providing outward support of the body during use. Returning to Fig. 1, the body 10 is elongated, defining opposing toe and heel ends and a longitudinal axis 16 extending between the ends. As shown in Fig. 2, the body includes tubular inner and outer layers of material 18, 20 that are secured together to define an intermediate space 22 between the layers and an interior space 24 within the inner tubular layer 18. A plurality of baffles 26 are formed between and connect the inner and outer layers of the body together. The baffles extend in a direction generally parallel to the longitudinal axis 16 between the toe and heel ends of the body to divide the intermediate space 22 into compartments. The desiccant composition 12

is preferably enveloped within at least one of the compartments, and the support means 14 is provided in the interior space 24 of the body. The support means is compressible to allow the insert to be deformed for insertion into and removal from the footwear, and when properly positioned in the footwear, the insert substantially  
5 fills the interior space that would normally be occupied by the foot of a wearer.

The outer layer 20 of the body is preferably formed of a polyester fabric weighing 3.74 oz/yard and having 225 warp (long, strong thread) by 110 weft (salvage to salvage, short filler thread) strands/inch. The fabric is a twill weave of double strands, two over and two under, and is heat set to approximately 350° F.  
10 This preferred fabric is of a fine enough weave that it retains the desiccant composition within the insert regardless of whether the components of the desiccant composition are in granular or powder form. At the same time, the weave is coarse enough to allow the insert to breathe and to permit passage of moisture through the layer in both directions. Another desirable characteristic of the preferred material is  
15 that it be capable of withstanding temperatures in excess of about 212° F such as may be experienced during regeneration of the insert, as described below. If a material other than the preferred material is to be used in the outer layer of the insert, it is necessary that the material at least have the physical characteristics noted herein such that the material retains the desiccant composition in the insert,  
20 allows the insert to breathe and permits water to pass in both directions through the layer, and is capable of withstanding elevated temperatures during regeneration.

Preferably, the outer layer is formed of two generally L-shaped panels, each of a shape corresponding to the desired overall shape of the insert. The panels are secured together along the entire perimeter of the panels to form a closed tube so  
25 that any movement of air or moisture into and out of the body occurs through the outer layer.

The inner layer 18 of the body is not necessarily formed of the same material as the outer layer 20. Although it is necessary for the material of the inner layer to withstand the same maximum regeneration temperatures as the outer layer, it is not  
30 essential that the material of the inner layer prevent the passage of powdered desiccant material from the intermediate space of the body into the interior space.

Thus, any common natural or synthetic fiber, such as polyester fabric, having a suitably high melting point can be used to form the inner layer.

The inner layer is formed of two generally L-shaped panels, corresponding in shape to that of the panels used in the outer layer. The inner panels are secured  
5 together along the entire perimeter of the panels to form a closed tube so that the interior space defined by the inner layer is closed and is separated from the intermediate space defined between the inner and outer layers.

The baffles 26 are formed between and connect the inner and outer layers  
10 18, 20 of the body together, and are preferably formed by sewing the material together along vertically spaced, horizontally extending lines that are parallel to the longitudinal axis 16 extending between the toe and heel ends of the body, as shown in Fig. 1. The thread used in forming the baffles is preferably a natural or synthetic  
15 thread having at least the same minimum heat-resistant characteristics as the material used in the inner and outer layers. The baffles divide the intermediate space 24 into elongated, horizontally extending compartments within which the desiccant composition is retained.

With reference to Fig. 2, the desiccant composition 12 generally includes a desiccant and one or more fillers. Although any known granular or powdered  
20 desiccant can be used in the insert, the preferred desiccant is silica gel, which is an amorphous form of silica manufactured from sodium silicate and sulfuric acid. The interconnected pores of silica gel form a vast surface area that will attract and hold water by adsorption and capillary condensation, allowing the silica gel to adsorb about 40% of its weight in water at room temperature. In addition, silica gel is non-  
25 corrosive and non-toxic, some grades having been approved by the U.S. government for use in food and drug packaging.

Although the compartments of the intermediate space 22 could be filled completely with silica gel or another desiccant, it is preferred to provide a composition including a filler that combines with the desiccant to fill the space, while  
30 reducing the weight of the insert. In addition, the filler is selected for its ability to dissipate heat during regeneration of the desiccant so that the insert can be easily and safely regenerated and repeatedly used to remove moisture from footwear. The



preferred filler used in the composition is perlite, which is an amorphous siliceous aggregate that is lighter in weight than the selected desiccant, and that is non-hazardous. During regeneration, the filler dissipates heat from the desiccant to prevent overheating of the insert as moisture is released from the desiccant. Other  
5 fillers may be used in addition to the perlite in order to further enhance operation of the insert during use and regeneration.

Because the toe and heel of the insert are typically exposed to higher moisture levels than the ankle or shank, it is preferred that the desiccant composition used along the length of the insert include a higher percentage of  
10 desiccant than that used in the shank. For example, an exemplary embodiment of the insert includes a desiccant composition within the baffles running along the length of the foot including 34.8 volume percent silica gel, and a composition within baffles running along the shank including 9 volume percent silica gel. These different compositions are retained in the desired portions of the insert by the baffles  
15 which trap each composition within one of the horizontally extending compartments and prevent the composition from clumping at the bottom of the insert. Thus, although one composition is exposed to both the toe and heel of the insert, a different composition having less desiccant is retained in the shank compartments. If the desiccant composition employs too high a volume percentage of desiccant, it  
20 is possible that the insert would get too hot to handle during regeneration. On the other hand, if the desiccant composition employs too low a percentage of desiccant, the insert will not be effective in removing all of the moisture from a saturated article of footwear.

In the embodiment of Figs. 1 and 2, the support means 14 includes a hollow  
25 bladder 28 formed of airtight material and a means for permitting air to be forced under pressure into the bladder. The bladder 28 is preferably formed of a shape corresponding to the shape of the body and is sized at least as large as the interior space so that when the bladder is inflated, the body expands to fill the interior space of the article of footwear within which the insert is positioned. The means for  
30 permitting air to be forced into the bladder preferably includes a tubular stem 30 protruding from the body and accessible to the user so that the user can fill the

bladder by blowing into the stem. A cap 32 is provided for sealing the stem closed once air is forced into the bladder, maintaining the inflated, expanded condition of the insert during drying of the footwear. Alternately, a pump can be provided at a convenient location on the insert for pumping air under pressure into the bladder.

5 Such a pump is conventionally used in tennis shoes, hiking boots and ski boots for improving the fit of such footwear, and includes a pair of one-way valves, each located at an opposite end of the pump for directing air in one direction through the pump between atmosphere and the bladder.

10 With reference to Fig. 3, an alternate embodiment of the support means 14 is illustrated, and includes a roll or wad of fill material 34 that provides outward support of the body during use. Preferably, an unbonded polyester fiber is used to form the fill along at least the foot portion of the insert, and a roll of bonded polyester batting fills the shank portion of the interior space. Both of these materials are compressible to allow the insert to be deformed so that the insert can be easily  
15 pushed into an article of footwear during use and removed from the footwear subsequent to drying. Regardless of the material selected for use in filling the interior space of the body, it must be capable of withstanding the same range of elevated temperatures as the inner and outer layers of the body, and should be pliant enough to enable the body to be deformed so that it can be pushed into and  
20 pulled from any article of footwear to be dried.

During construction, each outer panel is sewn to the adjacent inner panel along the baffles to form a panel assembly. Thereafter, the top, front and bottom edges of the two resulting panel assemblies are sewn together so that the compartments of the intermediate space, and the interior space of the body are only  
25 accessible from the rear edge of the body. This permits the compartments of the intermediate space to be filled with the desiccant composition and for the support means to be placed within the interior space of the body before the rear edge of the body is sewn shut. The resulting insert completely encloses the desiccant composition within the body between the inner and outer layers, and segregates the  
30 composition within the elongated, laterally extending compartments.

During use, the initially dry insert is deformed in order to permit its placement into a wet boot, shoe or other article of footwear to be dried. In the embodiment of Figs. 1 and 2, this deformation is possible by deflating the bladder 28. Alternately, in the embodiment of Fig. 3, the deformation is possible due to the soft nature of the wad of fill 34. Thereafter, with the insert substantially filling the interior space, the footwear is sealed in an airtight bag or placed in a low humidity environment so that the desiccant retained in the insert adsorbs moisture from the article of footwear rather than from the surrounding air. Over the course of several minutes or hours, moisture is adsorbed into the desiccant from the boot, drying the footwear for subsequent use. Once a suitable amount of time has elapsed, the insert is withdrawn from the footwear, leaving only a very small percentage, if any, of the moisture in the footwear.

After one or more subsequent drying operations, the desiccant composition 12 nears a saturation point at which the composition is incapable of adsorbing additional moisture. In order to use the insert for further drying operations, it is necessary to regenerate the composition. The preferred method of achieving such regeneration is to heat the insert, reducing the capability of the desiccant to retain moisture and driving the moisture from the composition and from the insert. For example, by placing the insert in a microwave oven and activating the oven for a predetermined time, e.g. two or more three-to-six minute cycles between which the insert is turned, much of the moisture within the composition passes out of the desiccant and through the outer layer 20 of the body. Thus, the desiccant composition is dried so that the insert can be used subsequently in drying further articles of footwear.

Although the present invention has been described with reference to the preferred embodiment illustrated in the attached drawing figures, it is noted that substitutions may be made and equivalents employed herein without departing from the scope of the invention as recited in the claims. For example, a humidity indicator may be employed to signal the user that the desiccant composition has reached its moisture retaining limit. The indicator may take the form of a patch of commercially available moisture indicating material (e.g. that changes color above a

predetermined humidity level) placed upon the exterior of the outer layer. However, other known types of indicator could also be used.

**WHAT IS CLAIMED IS:**

1. A footwear drying insert comprising:

an elongated foot-shaped body defining opposing toe and heel ends and a

longitudinal axis extending between the ends, the body including

tubular inner and outer layers of material that are secured together to

define an intermediate space between the layers and an interior space

within the inner tubular layer;

a plurality of baffles formed between and connecting the inner and outer

layers of the body together, the baffles extending in a direction

generally parallel to the longitudinal axis between the toe and heel

ends of the body to divide the intermediate space into compartments;

at least one desiccant composition enveloped within at least one of the

compartments; and

a support means provided in the interior space for providing outward support

of the body during use drying footwear, the support means being

compressible to allow the insert to be deformed for insertion into and

removal from the footwear.

2. A footwear drying insert as recited in claim 1, wherein the support

means and the inner and outer layers of the body are formed of materials that are

capable of withstanding elevated temperatures in excess of about 212°F.

3. A footwear drying insert as recited in claim 1, wherein the outer layer

of the body is formed of a polyester fabric having a weave that retains the desiccant

composition within the body while allowing bidirectional passage of moisture

through the layer.

4. A footwear drying insert as recited in claim 1, wherein the baffles are

each spaced from adjacent baffles by at least one inch.

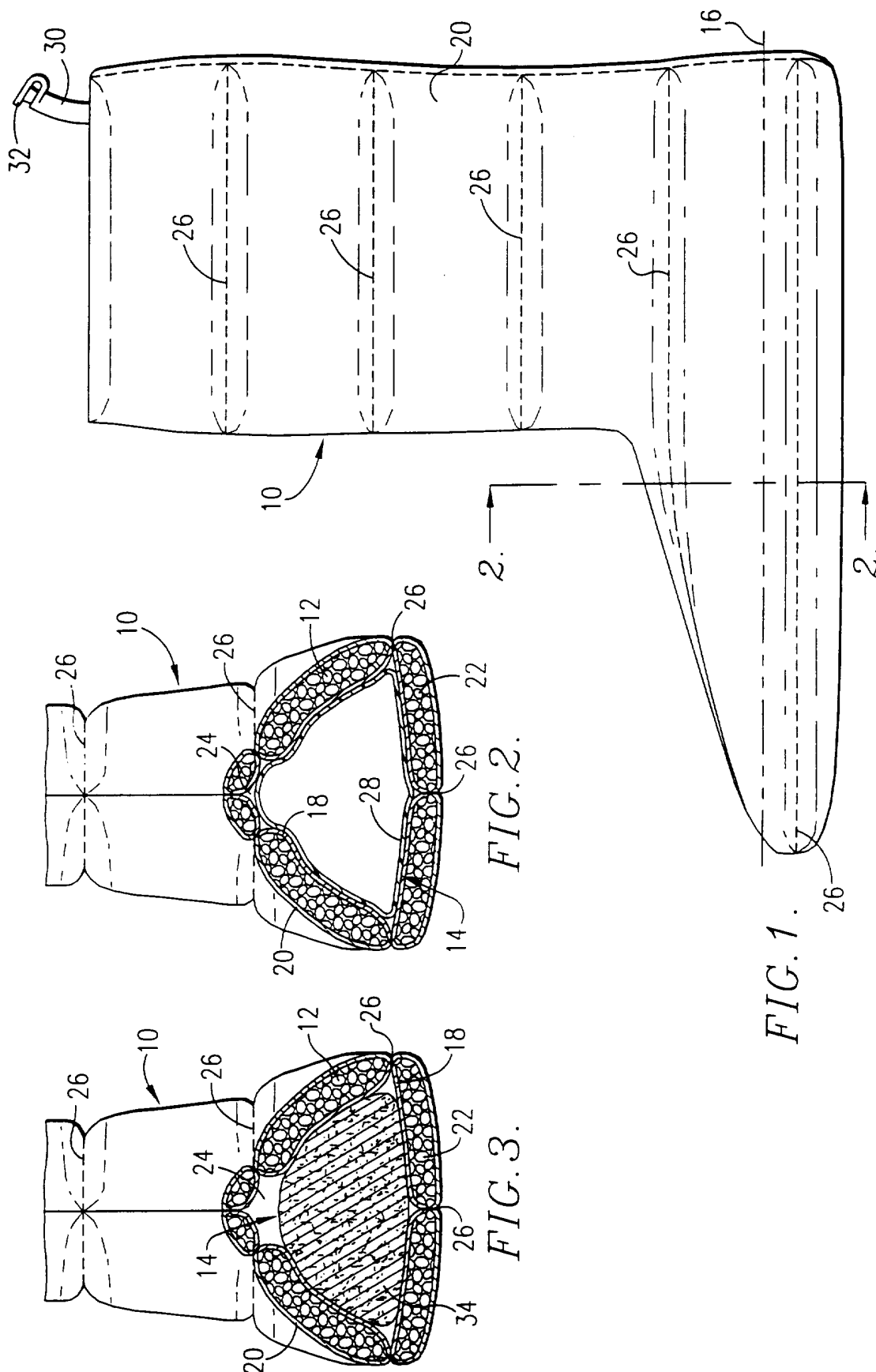
5. A footwear drying insert as recited in claim 4, wherein the baffles are each spaced from adjacent baffles by about two inches.

5 6. A footwear drying insert as recited in claim 1, wherein the body includes a shank extending upward from the heel end in a direction generally transverse to the longitudinal axis, and two desiccant compositions are enveloped within the compartments, one of the compositions including a relatively high desiccant volume percentage and being enveloped in the compartments extending between the toe and heel ends, and the other of the compositions including a  
10 relatively low desiccant volume percentage and being enveloped in the compartments of the shank.

7. A footwear drying insert as recited in claim 1, wherein the support means includes an inflatable bladder supported within the interior space of the body,  
15 and a means for inflating the bladder to provide outward support of the body during use and for deflating the bladder to allow the insert to be deformed for insertion into and removal from the footwear.

8. A footwear drying insert as recited in claim 1, wherein the support means includes a compressible support material retained in the interior space of the  
20 body.

9. A footwear drying insert comprising:
- an elongated foot-shaped body defining opposing toe and heel ends and a longitudinal axis extending between the ends, the body including tubular inner and outer layers of material that are secured together to define an intermediate space between the layers and an interior space within the inner tubular layer, the outer tubular layer being formed of a heat resistant synthetic fabric that is both gas and liquid permeable in both directions;
- a desiccant composition enveloped within the intermediate space and including a granular desiccant material and a filler; and
- a support means provided in the interior space for biasing the body radially outward from the longitudinal axis to support the body during use drying footwear, the support means being compressible to allow the insert to be deformed for insertion into and removal from the footwear.





# INTERNATIONAL SEARCH REPORT

I. national application No.  
PCT/US96/16612

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : F26B 25/00, 19/00; A43B 3/10

US CL : 34/104, 80, 81; 36/10

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 34/104, 80, 81; 36/10

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

NONE

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 5,291,669 (KHOURY ET AL.) 08 MARCH 1994.	1-9
A	US, A, 5,025,575 (LAKIC) 25 JUNE 1991.	1-9
A	US, A, 4,901,450 (CHEMELLO ET AL.) 20 FEBRUARY 1990.	1-9
A	US, A, 4,845,862 (PHILLIPS, JR. ET AL) 11 JULY 1989.	1-9
A	US, A, 4,724,627 (SISCO) 16 FEBRUARY 1988.	1-9
A	US, A, 4,420,893 (STEPHAN) 20 DECEMBER 1983.	1-9
A	US, A, 3,694,940 (STOHR) 03 OCTOBER 1972.	1-9
A	US, A, 2,869,253 (SACHS) 20 JANUARY 1959.	1-9

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
*A* document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
*E* earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*G* document member of the same patent family
*O* document referring to an oral disclosure, use, exhibition or other means	
*P* document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 08 DECEMBER 1996	Date of mailing of the international search report 27 DEC 1996
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer <i>Stacia Doster</i> DINNATIA DOSTER Telephone No. (703) 308-7569

# INTERNATIONAL SEARCH REPORT

national application No.  
PCT/US96/16612

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 2,435,131 (DESBIENS) 27 JANUARY 1948.	1-9