

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
5 February 2009 (05.02.2009)

PCT

(10) International Publication Number
WO 2009/017730 A1

(51) International Patent Classification:

A43C 13/14 (2006.01) A43B 11/00 (2006.01)
A43D 3/14 (2006.01)

(21) International Application Number:

PCT/US2008/009165

(22) International Filing Date: 30 July 2008 (30.07.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/962,761 31 July 2007 (31.07.2007) US
60/995,233 25 September 2007 (25.09.2007) US

(71) Applicant and

(72) Inventor: **SIRAGUSA, Paul** [US/US]; 820 Royal Crest Court, McKinney, TX 75070 (US).

(74) Agent: **TEDESCHI, Bruce, W.**; Rakosky, Haviland & Tedeschi, PC, 71 Granite Street, P.O. Box 1190, New London, CT 06320-1190 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(54) Title: WEARABLE SHOE TREE

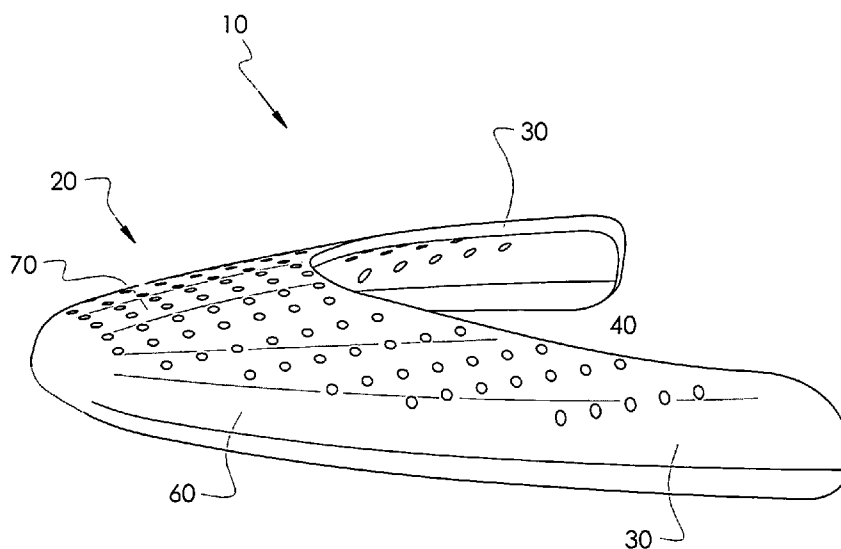


Fig. 2

(57) Abstract: A wearable shoe tree is provided to be inserted within the interior of various types of shoes, thereby helping maintain the original shape of the shoe and preventing the front area (or toe box area), side walls, and heel from creasing and wrinkling over time. The wearable shoe tree can be comfortably worn and keeps the shape of a shoe whether the shoe is being worn or not. In addition to maintaining the shape and aesthetics of the shoe, the can also be used as an aid to athletic shoe customization. Modifications can be made to the shoe tree to allow it to be permanently affixed into the shoe or to allow it to be used by handicapped individuals for aesthetic purposes.

WO 2009/017730 A1

WEARABLE SHOE TREE

CROSS REFERENCE TO RELATED APPLICATION

This application claims the benefit of priority from U.S. Provisional Patent Applications, Serial No. 60/962,761 filed July 31, 2007 and Serial No. 60/995,233 filed September 25, 2007, the disclosures of which are incorporated by reference herein their entirety.

BACKGROUND OF THE INVENTIONField of the Invention

Shoes (especially athletic shoes) are subject to deformations, whether due to wear-and-tear or simple gravity, thereby perturbing the patency and aesthetics of the footwear. Typically, such plastic changes appear as creases or wrinkles on the front of the shoe just above where the toes are situated (i.e. toe box area), the sidewalls and heels of footwear. These creases or wrinkles detract from the overall appearance and functionally can diminish the useful life of the shoes. The present invention relates to a special wearable shoe insert, designed to be positioned within the interior of various types of shoes, thereby helping maintain the original shape of the shoe and preventing the front area (or toe box area) side walls and/or heels from creasing and wrinkling over time. The wearable shoe tree can be inserted each time the footwear is worn or installed permanently by the footwear manufacturer. The shoe tree insert can also maintain the shape of the footwear, even when the footwear is not being worn, since the legs of the flexible thin plastic shell lock it into the interior superior walls of the shoe.

In addition to helping maintain the overall appearance and useful life of footwear, the invention has useful medical or health applications. For example, the invention may allow individuals with amputations to present the appearance of a normal foot in a shoe.

In conditions of diabetic neuropathy, diabetic patients may not size their shoes appropriately due to numbness of the toes. The deformation of the toe box can cause debilitating abrasions of the toe knuckles in these patients. Finally, since portions of the plastic shoe tree can be manually cut out from the shoe tree, the invention can be worn by individuals with corns, bunions and other anomalous growths on feet and toes.

The invention can also be used as an aid to both athletic shoe customization and/or beautification. Since the legs of the flexible plastic wearable shoe tree shell lock it into the walls of the shoe and create a crease-free exterior surface, the shoe can be painted, shined or similarly modified in a distortion-free manner.

Further modifications to the shoe tree, that have both aesthetic and medical benefits, may include scenting of the shoe tree and/or treatment of the shoe tree with anti-microbials.

Description of Related Art

Insert footwear devices or caps are known in the Art for the protection of toes from compressible or bending forces.

The Gray Patent (U.S. Patent No. 3,950,865) discloses a rigid safety toe box insert with a balanced phalange design thereby prevention rotation of the toe box rear edge downwardly upon application of external forces while increasing the bearing area of the box on the soling materials used in the footwear.

The Yang Patent Publication (U.S. Pub. No. 2005/0144809) discloses a shoe toe cap having interior and exterior surface with multiple reinforcement layers. The toecap is made with a reinforced composite allowing flexible binding so the toecap can be fastened to other parts of the shoe, such as an upper, a tongue and a sole with stitches.

The Gougelet et al. Patent (U.S. Patent No. 6,598,323B1) discloses a shoe toe protection device having a smoother outer layer and inner layer composed of reinforcing rib members. The protector comprises a top, front end and open back end and sides contiguous with the top and front.

The Gesso Patent (U.S. Patent No. 6,170,174) discloses a shock absorbing liner attached to the interior of a baseball shoe to help protect the toes and upper portion of the player's foot. The protective shell, composed of layers of hard plastic, are shaped to cover essentially the entire upper foot region including the toes. The shell members are joined by bendable elements to allow flexion.

The Streit et al Patent (U.S. Patent No. 3,561,142) discloses a shoe having a toe box protection portion with a force-transmitting spring metal strip.

The Wang Patent (U.S. Patent No. 5,832,633) discloses a toe cap, having an open and closed end, comprised of several layers of fibers to provide toe protection that gives structural protective strength without the electrical/magnetic complications of metal toe caps.

The Rose design Patent (U.S. Patent No. D316,772) is directed to an ornamental design for a safety shoe toe cap.

In all of the preceding examples of Art, the invention disclosures are directed to the toe box region of the shoe (i.e. the upper portion of the footwear that roughly covers the toes) wherein the inserts are intended to protect the toe area against compressible or tensile forces yet allowing the shoe to maintain some degree of flexibility. Thus, 'construction-type' footwear and shoes used in particular high-impact sports activities are the main useful purpose of the toe boxes or caps. The inventions are not intended to

prevent creasing, wrinkling or maintenance of a shoe's patency for aesthetics or similar purposes. Further, the protective inserts are limited to the toe box area and do not protect other foot regions in the shoe.

In contradistinction to these purposes, two patent publications describe shoe insert inventions intended to maintain the aesthetic patency of footwear.

The Shaw et al. Patent Publication (U.S. Pub. No. 2006/0070262A1) describes a curved plastic toe cap insert for athletic shoes to prevent wrinkling of the toe end of the shoe upper. The disclosed insert shell has a contoured front wall curving rearwardly into an upper wall and curving on opposite sides into opposed side walls. The insert does not extend rearward beyond the toe box. Thus, although the construction of the insert can help prevent wrinkling of the toe cap region of the shoe, it does not prevent wrinkling or creasing in any other region of the footwear.

The Spar et al. Patent Publication (U.S. Pub. No. 2008/0148607A1) discloses a shoe insert composed of a semi-rigid inner shell and an outer shell that would prevent the front area or toe section from creasing. It is not designed to conform itself to the interior of any shoe nor is it designed to maintain the shape and patency of the whole shoe.

Thus, although partial solutions to the maintenance of shoe patency and aesthetics have been developed, such as discussed above, there still remains a need in the art for a wearable shoe insert that can maintain the patency of the whole shoe upper, preventing wrinkling, creasing and other signs of physical stress/strain wear. There has been a long felt need for such an insert not only for aesthetic reasons, but also for medical applications and, recently, shoe customization. The present invention not only provides a solution to

this long felt need but it is functionally designed to be wearable, thus offering the capability of maintaining shoe patency, even when worn.

SUMMARY OF THE INVENTION

The purposes and advantages of the present invention will be set forth in, and apparent from, the description that follows, as well as will be learned.

The invention consists of an insert that is placed in the shoe just like a shoe tree and allows a user to wear the sneakers or shoes with the insert in the shoe. These inserts will allow the user to keep the original shape of the footwear while being worn or not. It also gives the user the benefit of wearing the shoes or sneakers while the inserts are still inside the shoe thus giving an extra level of protection against the wear-and-tear that would normally occur. Other advantages derive from the ability of the wearable shoe tree to maintain the patency of footwear. In the medical/health field, for example, individuals with complete or partial foot amputations can present the appearance of a normal foot in a shoe. For patients with diabetic neuropathy, the invention can protect the toes from collapse or deformation of the toe box. Also, since portions of the plastic shoe tree can be manually cut out from the tree, the invention can be worn by individuals with corns, bunions and other anomalous growths on feet and toes. In another example, the wearable shoe tree can be used as an aid to athletic shoe customization and beautification. Since the legs of the flexible plastic shoe tree shell lock it into the walls of the shoe and create a crease-free exterior surface, the shoe can be painted, shined or similarly modified in a distortion-free manner.

In one embodiment, the wearable shoe tree is made of plastic with a closed shape at the top box or cap region and two legs that extend down the sides of the footwear. The ends

of the legs are flexible, but firm enough, so that the legs can be bent together slightly thereby creating tension. The shoe tree can then be inserted into the footwear. Once the tensional force on the two legs is removed, the legs of the shoe tree naturally snap back to their original position, thereby “locking” the shoe tree to the inside surface of the shoe upper. The plastic material can be cut or shaped to allow greater comfort for the user.

In another embodiment, the legs of the shoe tree extend all the way back along the sidewalls of the shoe to, and around, the heel. This configuration would allow maintenance of the patency of the complete shoe upper including toe region, sidewalls and heel.

In still another embodiment, the shoe tree insert is fenestrated, thereby decreasing the weight of the insert and allowing aeration within the shoe.

In still another embodiment, the shoe tree is made of a material that would allow it to be permanently tailored or manufactured into the shoe. Alternatively, the exterior surface of the plastic shoe tree can be glued, or modified, to allow it to be permanently affixed to the shoe.

In still another embodiment, padding or other material can be affixed to the inside surface of the shoe tree. This could increase the comfort of the shoe or allow an appropriate filler for certain medical or health conditions.

In still another embodiment, the insert can have various cutouts of the material to allow greater comfort and/or flexibility in particular regions of the feet.

In still another embodiment, the insert is made from a non-plastic material such as wood, rubber, metal or ceramic.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this specification, illustrate embodiments of the invention and together with the description serve to explain the principles of the invention:

In the drawings:

Fig. 1 illustrates a side view of shoe with insert installed;

Fig. 2 illustrates a perspective view of insert;

Fig. 3 illustrates a front view of insert;

Fig. 4 illustrates a side view of insert; and

Fig. 5 illustrates a top view of insert.

DETAILED DESCRIPTION OF THE EMBODIMENT

Detailed reference will now be made to the most preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings. Referring to Figs. 1 –5, the wearable shoe tree comprises a shoe tree-type insert that keeps the shape of the whole upper shoe when the shoe is not being worn. Furthermore, the shape and size of the insert allows it to be comfortably worn by the user, thereby preventing creasing or other damage to the shoe that normally occurs with use. The insert does not otherwise interfere with the wearing of the shoe.

Figure 1 illustrates a side view of the insert 10 in a shoe. The insert snugly molds, via pressure tension of the legs of the insert, to the inner surface of the uppers. The construction of the insert protects against deformations (e.g. creasing, wrinkling, etc.) of the toe box area 20 and sidewalls 30 of the uppers. In another embodiment the insert

shell extends all the way around the shoe thereby also protecting against deformations in the heel upper.

Figure 2 illustrates a perspective view of the insert 10. The toe box region 20 of the insert provides a convex ceiling 70 that snugly fits to the inner surface of the shoe upper and follows the contours from the shoe upper down to the floor of the shoe where the upper meets the sole. The two legs 30 of the insert extend from the toe box region to snugly (via pressure tension) snap into the inner surface of the shoe sidewalls 60. The two legs of the insert create a “U” wherein the “U” space 40 between the two legs allows for flexibility and comfort in the vamp region of the shoe. In some embodiments of the invention, the thin volume of the insert can be fenestrated to decrease the insert weight and increase aeration.

Figures 3, 4 and 5 show other view planes of the shoe tree. The front (Fig. 3) and side (Fig. 4) views show the curved nature of the insert from a horizontal and vertical viewpoint. It basically points out that the curvature follows the natural curvature of a shoe's upper at the toe box and around the side walls. The lower walls of the insert sit atop the floor of the shoe's upper.

CLAIMS

What is claimed is:

1. A wearable shoe tree comprising a structural shell insert that fits into a shoe.
2. The wearable shoe tree of claim 1, wherein the insert fits into a shoe beneath the inner wall of the toe box with extended legs that fit beneath the inner sidewalls of the shoe.
3. The wearable shoe tree of claim 1, wherein the insert fits into a shoe beneath the inner wall of the toe box with extended legs that fit beneath the inner sidewalls of the shoe and further extend all the way around the shoe to meet at the back of the heel.
4. The wearable shoe tree of claims 1, 2 or 3 that is made of materials selected from the group consisting of wood, metal, ceramic or plastic.
5. The wearable shoe tree of claims 1, 2 or 3 that is perforated at various places in, and through, the surface of the insert to provide for aeration and a lighter weight.
6. The wearable shoe tree of claims 1, 2 or 3 that is scented.
7. The wearable shoe tree of claims 1, 2 or 3 that is impregnated with an anti-microbial.
8. The wearable shoe tree of claims 1, 2 or 3 that is modified along its surface to provide for permanent insertion into a shoe.
9. The wearable shoe tree of claims 1, 2 or 3 that is directly padded, or modified to be padded, on the interior surface of the insert to present the impression that a foot is the shoe.
10. The wearable shoe tree of claims 1, 2 or 3 that is used to prevent foot or toe injury in patients with diabetic neuropathy due to deformation of the toe box.

11. The wearable shoe tree of claims 1, 2 or 3 that is used to aid shoe customization, shining and other modifications of the shoe surface.
12. The wearable shoe tree of claim 7 that is used to prevent the development of toenail fungus, athlete's foot, or other microbial infections of the foot and toe area.
13. The wearable shoe tree of claim 7 that is used to treat toenail fungus, athlete's foot, or other microbial infections of the foot and toe area.

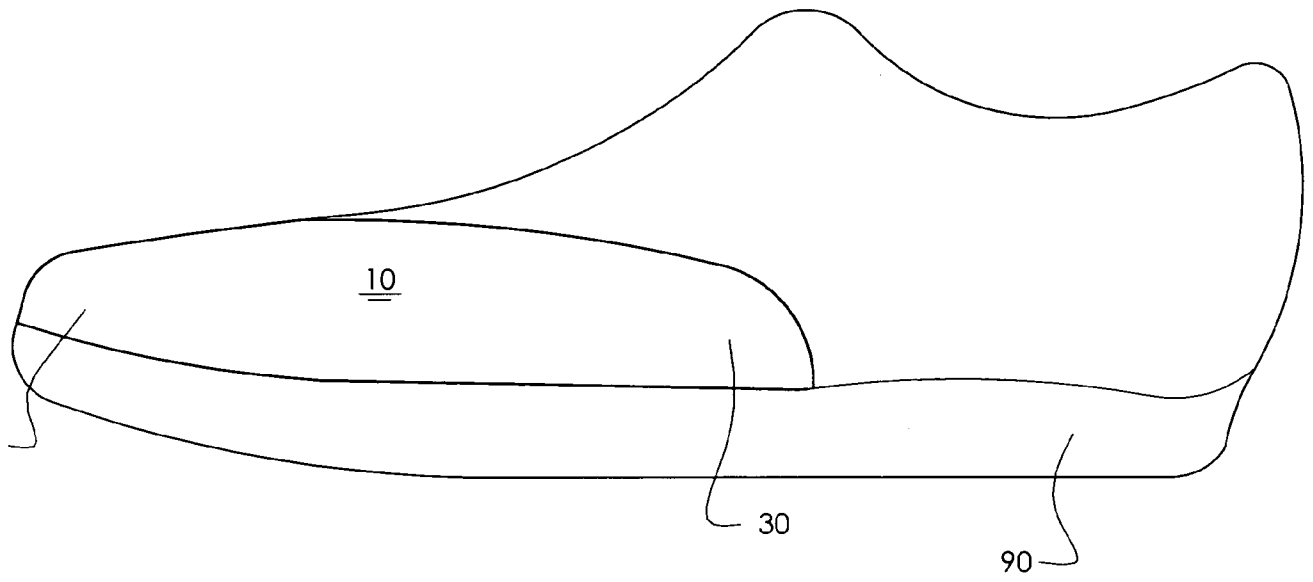


Fig. 1

2/3

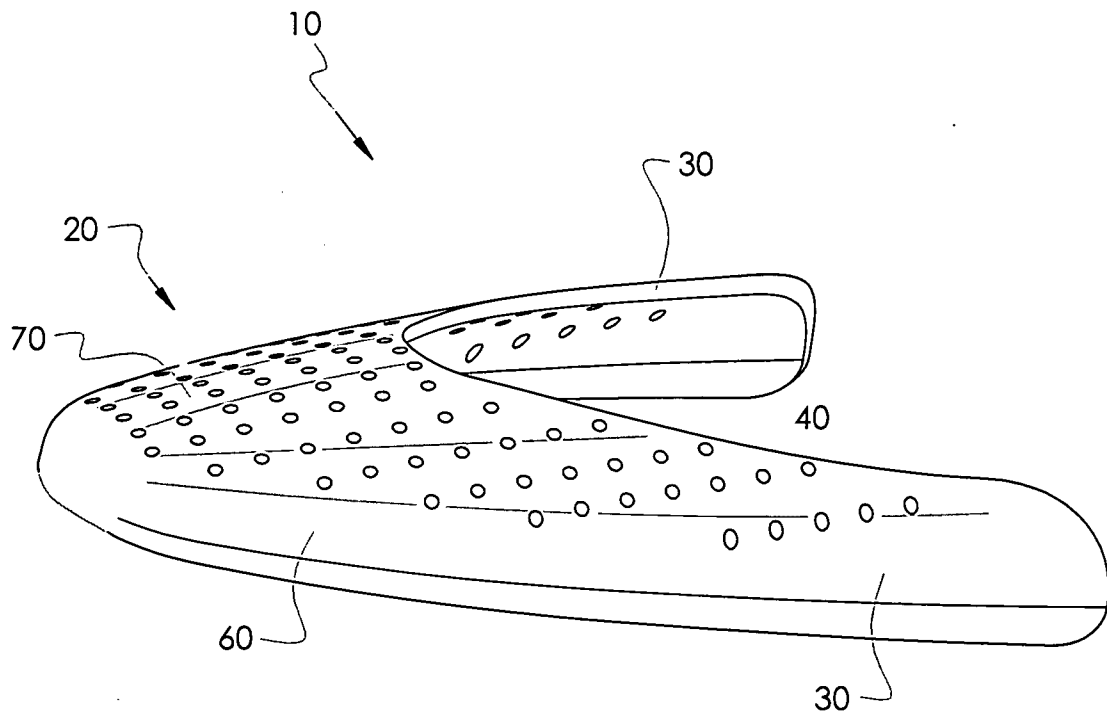


Fig. 2

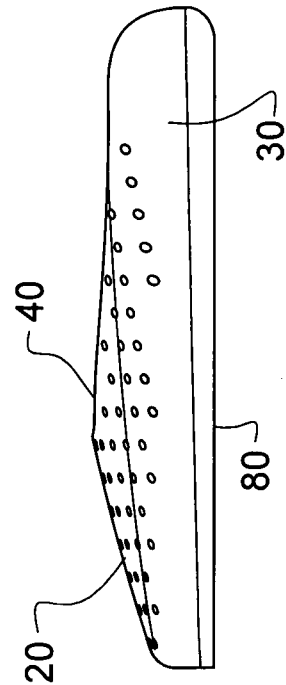


Fig. 4

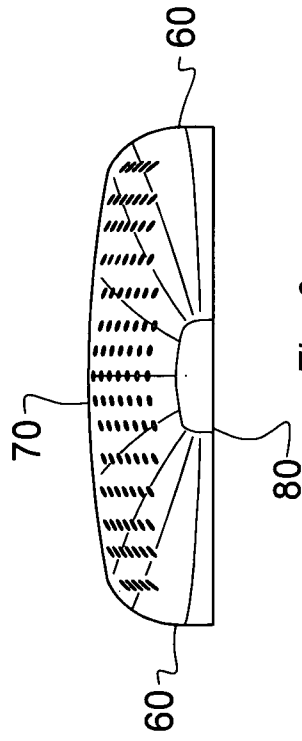


Fig. 3

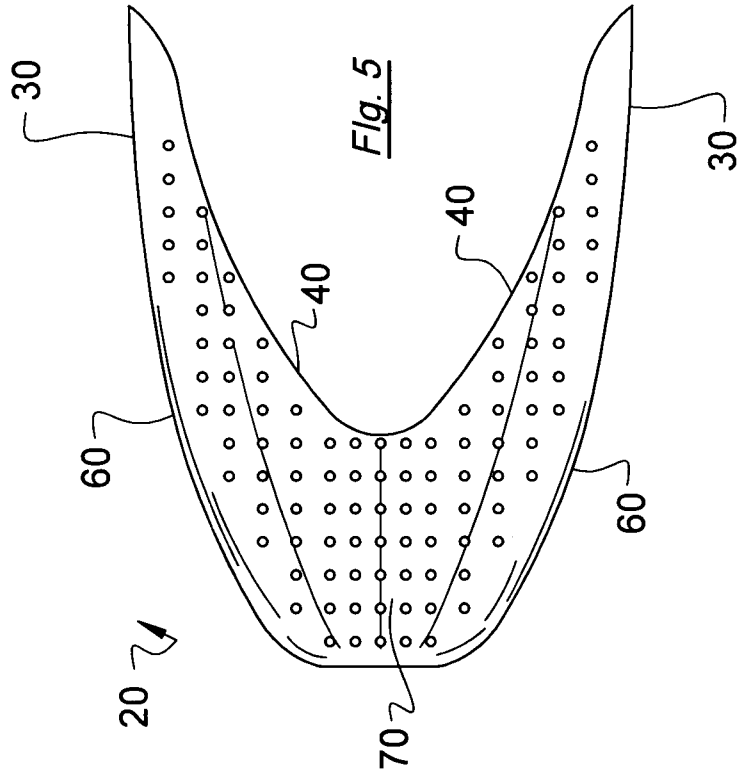


Fig. 5



A. CLASSIFICATION OF SUBJECT MATTER*A43C 13/14(2006.01)i, A43D 3/14(2006.01)i, A43B 11/00(2006.01)i*

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)

IPC 8 A43B 17/00, A43B 23/00, A43C 13/14, A43D 3/14, A43D 5/00, B29C 44/02

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

Korean Utility models and applications for Utility models since 1975

Japanese Utility models and applications for Utility models since 1975

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

eKIPASS(KPA, PAJ, FPD, USPATFULL) in KIPO, & keyword : wearable shoe tree

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	KR 20-1994-0005517 Y1 (Jung-Yeop Kyung) 18 August 1994 see page 2; claim 1, claim 2, claim 14, claim 15; Figure 1 - Figure 3.	1-7, 10-13 9
A Y	US 5942172 A (Su-Man Huang Liu) 24 August 1999 see Figure 1 - Figure 3; column 1, line 55 - column 2, line 24.	1-7 9
A	JP 09-206105 A (DAISHO KK) 12 August 1997 see [0006] - [0010]; Figure 1.	1-3, 6
A	KR 20-0212934 Y1 (Dae Yeon Co.) 15 February 2001 see abstract; claim 1; Figure 1 - Figure 4.	1-3, 6



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"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

"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

"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

"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

"&" document member of the same patent family

Date of the actual completion of the international search

29 DECEMBER 2008 (29.12.2008)

Date of mailing of the international search report

29 DECEMBER 2008 (29.12.2008)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Seo-
gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

KANG, SANG YOON

Telephone No. 82-42-481-8651



INTERNATIONAL SEARCH REPORTInternational application No.
PCT/US2008/009165**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 8
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

The terms used in claim 8 is vague and unclear and leaves the reader in doubt as to the meaning of the technical feature to which it refers.
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2008/009165

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR 20-1994-0005517 Y1	18.08.1994	None	
US 5942172 A	24.08.1999	US 5942172 A	24.08.1999
JP 09-206105 A	12.08.1997	JP 09-206105 JP 9206105 A	12.08.1997 12.08.1997
KR 200212934 Y1	15.02.2001	None	