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(71) Applicant (for all designated States except US): **MARRIOTT'S BUSINESS SERVICES LTD** [GB/GB]; Leigh House, Weald Road, Brentwood, Essex CM14 4SX (GB).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **HALLETT, Brian Richard** [GB/GB]; 40 Shevon Way, Brentwood, Essex CM14 4PL (GB).

(74) Agent: **JONES, Graham Henry**; Graham Jones & Co, 77 Beaconsfield Road, Blackheath, London SE3 7LG (GB).

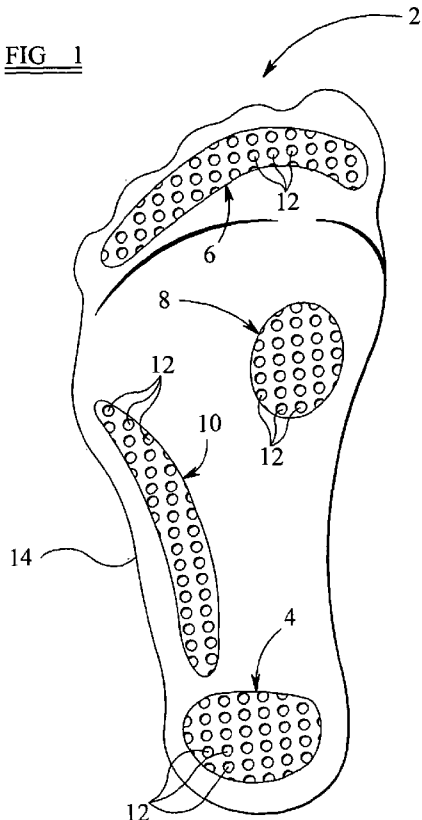
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(54) Title: A SOLE MEMBER FOR AN ARTICLE OF FOOTWEAR

FIG 1



(57) Abstract: A sole member (2) for an article of footwear, which sole member (2) is made of a plastics foam material, and which sole member (2) comprises at least one pressure-relieving area (4, 6, 8, 10) comprising a plurality of apertures (12), the pressure-relieving area (4, 6, 8, 10) in use being underneath a part of a person's foot requiring relief, and the pressure-relieving area (4, 6, 8, 10) being of a lesser stiffness than adjacent areas of the sole member (2).



SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG). **Published:**

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— *of inventorship (Rule 4.17(iv))*

A SOLE MEMBER FOR AN ARTICLE OF FOOTWEAR

This invention relates to a sole member for an article of footwear. The sole member may be an inner sole or sole for the article of footwear.

Articles of footwear such for example as shoes and boots usually have a sole member in the form of an inner sole. The inner sole extends over a sole of the article of footwear. Known inner soles are made from various materials, with some materials being softer than others. For example, a known inner sole made from a plastics foam material may generally be more comfortable to use than an inner sole made of leather or cardboard. Irrespective of the material from which the known inner soles are made, they are manufactured to provide the same level of stiffness throughout the entire inner sole.

It is an aim of the present invention to provide a sole member which is able to offer different levels of stiffness throughout the sole member.

Accordingly, in one non-limiting embodiment of the present invention, there is provided a sole member for an article of footwear, which sole member is made of a plastics foam material, and which sole member comprises at least one pressure-relieving area comprising a plurality of apertures, the pressure-relieving area in use being underneath a part of a person's foot requiring relief, and the pressure-relieving area being of a lesser stiffness than adjacent areas of the sole member.

The sole member of the present invention is advantageous in that the pressure-relieving area is able to be less rigid than the adjacent areas of the sole member. Thus the pressure-relieving area is able to provide a pressure-relieving facility to one or more parts of the bottom of a person's foot that require extra attention. For example, many persons suffer with inflamed heels. A sole member of the present invention with a pressure-relieving area positioned in use underneath a person's heel which is inflamed, is able to provide much wanted and much appreciated relief from pain whilst the person is walking.

The sole member of the present invention may be one in which there is a plurality of the pressure-relieving areas, and in which the pressure-relieving areas are positioned such that in use the pressure-relieving areas are under at least two of a person's heel, toes, ball, and arch of the person's foot.

Preferably, the sole member is one in which there are four of the pressure-relieving areas, and in which they are positioned one under the heel, toes, ball and arch.

The sole member may be one in which the pressure-relieving areas for the heel and arch are circular in plan, in which the pressure-relieving area for the toes is elongate and inwardly curved towards the heel in plan, and in which the pressure-relieving area for the arch is elongate and outwardly curved towards an adjacent side of the sole member. Other shapes for the pressure-relieving areas may be employed.

In an alternative embodiment of the invention, the sole member may be one in which there is only one of the pressure-relieving areas, and in which

the pressure-relieving area covers all the desired places of a person's foot, for example one or more of the above mentioned places of the person's foot.

Preferably, the apertures are bores. Other types of apertures may be employed. Different types and/or sizes of apertures may be employed for different pressure-relieving areas in the same sole member so that a sole member may have a plurality of the pressure-relieving areas of different degrees of stiffness. The different degrees of stiffness may give different degrees of softness or hardness.

Preferably, the bores are through bores extending between upper and lower faces of the sole member. Alternatively, the bores may be blind bores which extend into the sole member from an upper or a lower face of the sole member.

Usually, the bores will be of circular cross section. If desired however the bores may be of other cross sectional shapes such for example as elliptical, square or rectangular.

The bores may be covered with a cover layer so that that mouths of the bores are not felt during use. The cover layer may be made of a plastics foam material. The cover layer may be made of other materials if desired.

The bores may be impregnated with a foot odour-reducing material. Any known foot odour-reducing material may be employed so that, for example, the foot odour-reducing material may be a carbon-based material.

The sole member of the present invention may be an inner sole. The inner sole may be manufactured and sold in the form of a separate item for fitting into an existing article of footwear. In this case, the inner sole will

usually be sold in pairs. Alternatively, the inner sole may be in the form of an integral part of an article of footwear. Preferably, the inner sole is one which extends in use over an entire sole of the article of footwear. A shorter inner sole, for example just for the heel or toes, may be employed if desired. The sole member of the present invention may also be a sole of an article of footwear. In this case, the article of footwear may be a slipper, sandal, flip-flop, or beach footwear.

The present invention also extends to an article of footwear when provided with the sole member of the invention. The article of footwear may be any suitable and appropriate articles of footwear including shoes, trainers, boots, Wellingtons, slippers, sandals, flip-flops, or beach footwear.

The plastics foam material for the sole member may be polyurethane. Other plastics foam materials may be employed.

The sole member of the present invention may provide the following advantages:

- (i) take pressure off the load on a person's foot;
- (ii) distribute the load on a person's foot so that as little as possible of shockwaves generated during walking and running are transmitted to body tissues of the person;
- (iii) increase blood flow and circulation in the person's foot;
- (iv) support the arch of the person's foot without direct pressure;
- (v) alleviate pressure and shock to nerves and nerve endings.

Embodiments of the invention will now be described solely by way of example and with reference to the accompanying drawings in which:

Figure 1 is a top plan view of a sole member in the form of an inner sole for the left foot of an article of footwear;

Figure 2 is a top plan view of a sole member in the form of an inner sole for the right foot of an article of footwear;

Figure 3 is a cross section through one type of inner sole of the present invention;

Figure 4 is a cross section through another type of inner sole of the present invention; and

Figure 5 is a cross section through another type of inner sole of the present invention.

Referring to Figure 1, there is shown a sole member in the form of an inner sole 2 for the left foot of an article of footwear such for example as a shoe, trainer or boot. The inner sole 2 is made of a plastics foam material. The inner sole 2 comprises a plurality of pressure-relieving areas 4, 6, 8, 10. Each pressure-relieving area 4, 6, 8, 10 comprises a plurality of apertures in the form of bores 12. In use of the inner sole 2, the pressure-relieving area 4 is under a person's heel, the pressure-relieving area 6 is under the person's toes, the pressure-relieving area 8 is under the person's ball of their foot, and the pressure-relieving area 10 is under the person's arch. The pressure-relieving areas 4 and 8 for the heel and ball respectively are substantially circular in plan as shown. The pressure-relieving area 6 for the toes is

elongate and inwardly curved towards the heel in plan. The pressure-relieving area 10 for the arch is elongate and outwardly curved towards and adjacent side 14 of the inner sole 2.

Figure 2 shows an inner sole 16 which is the same as the inner sole 2 except that it is for a right article of footwear rather than a left article of footwear. Similar parts have been given the same reference numerals for ease of comparison and understanding.

The bores 12 shown in the inner soles 2, 16 are of circular cross section as shown. Figures 3, 4 and 5 show how different types of bores may be employed in inner soles of the present invention.

Referring to Figure 3, there is shown a cross section through a pressure-relieving area 18 in an inner sole of the present invention. The pressure-relieving area 18 has bores 20 which are through bores and which extend between an upper face 22 and a lower face 24 of the inner sole.

Figure 4 shows a pressure-relieving area 26 which is comparable to the pressure-relieving area 18 but which has blind bores 28. The blind bores 28 extend inwardly from the upper face 22 of the inner sole but terminate short of the lower face 24 of the inner sole.

Figure 5 shows a pressure-relieving area 30 having blind bores 32. The blind bores 32 extend inwardly from the lower face 24 of the inner sole and stop short of the upper face 22 of the inner sole.

The inner soles shown in the drawings may be made of various plastics foam materials including polyurethane. The plastics foam materials may be closed cell foam materials or open cell foam materials. The inner

soles are able to be manufactured inexpensively whilst at the same time providing very considerable advantages in terms of foot comfort, and pain avoidance or alleviation.

It is to be appreciated that the embodiments of the invention described above with reference to the accompanying drawings have been given by way of example only and that modifications may be effected. Thus, for example, the illustrated bores 12, 20, 28, 32 may be of cross sectional shapes other than circular. Some of the illustrated pressure-relieving areas 4, 6, 8, 10 may be combined together, or all of the pressure-relieving areas 4, 6, 8, 10 may be combined together into one single pressure-relieving area. The inner soles shown in the drawings may be separate items for fitting into an existing article of footwear, or they may be an integral part of an article of footwear. The inner soles may alternatively be constructed as soles for articles of footwear, for example for slippers, sandals, flip-flops or beach footwear. Individual components shown in the drawings are not limited to use in their drawings and they may be used in other drawings and in all aspects of the invention.

CLAIMS

1. A sole member for an article of footwear, which sole member is made of a plastics foam material, and which sole member comprises at least one pressure-relieving area comprising a plurality of apertures, the pressure-relieving area in use being underneath a part of a person's foot requiring relief, and the pressure-relieving area being of a lesser stiffness than adjacent areas of the sole member.
2. A sole member according to claim 1 in which there is a plurality of the pressure-relieving areas, and in which the pressure-relieving areas are positioned such that in use the pressure-relieving areas are under at least two of a person's heel, toes, ball and arch of the person's foot.
3. A sole member according to claim 2 in which there are four of the pressure-relieving areas, and in which they are positioned one each under the heel, toes, ball and arch.
4. A sole member according to any one of the preceding claims in which the pressure-relieving areas for the heel and ball are circular in plan, in which the pressure-relieving area for the toes is elongate and inwardly curved towards the heel in plan, and in which the pressure-relieving area for the arch is elongate and outwardly curved towards an adjacent side of the sole member.

5. A sole member according to claim 1 in which there is only one of the pressure-relieving areas, and in which the pressure relieving area covers all the desired places of a person's foot.

6. A sole member according to any one of the preceding claims in which the apertures are bores.

7. A sole member according to claim 6 in which the bores are through bores extending between upper and lower faces of the sole member.

8. A sole member according to claim 6 in which the bores are blind bores which extend into the sole member from an upper or a lower face of the sole member.

9. A sole member according to any one of the preceding claims in which the bores are of circular cross section.

10. A sole member according to any one of the preceding claims in which the bores are covered by a cover layer so that the mouths of the bores are not felt during use.

11. A sole member according to claim 10 in which the cover layer is made of a plastics foam material.

12. A sole member according to any one of the preceding claims in which the bores are impregnated with a foot odour-reducing material.

13. A sole member according to any one of the preceding claims and in which sole member is an inner sole.

14. A sole member according to claim 13 in which inner sole is in the form of a separate item for fitting into an existing article of footwear.

15. A sole member according to claim 13 in which the inner sole is in the form of an integral part of an article of footwear.

16. A sole member according to any one of claims 13 – 15 in which the inner sole extends over an entire sole of the article of footwear.

17. A sole member according to any one of claims 1 – 12 and in which the sole member is a sole.

18. An article of footwear when provided with a sole member according to any one of claims 1 – 17.

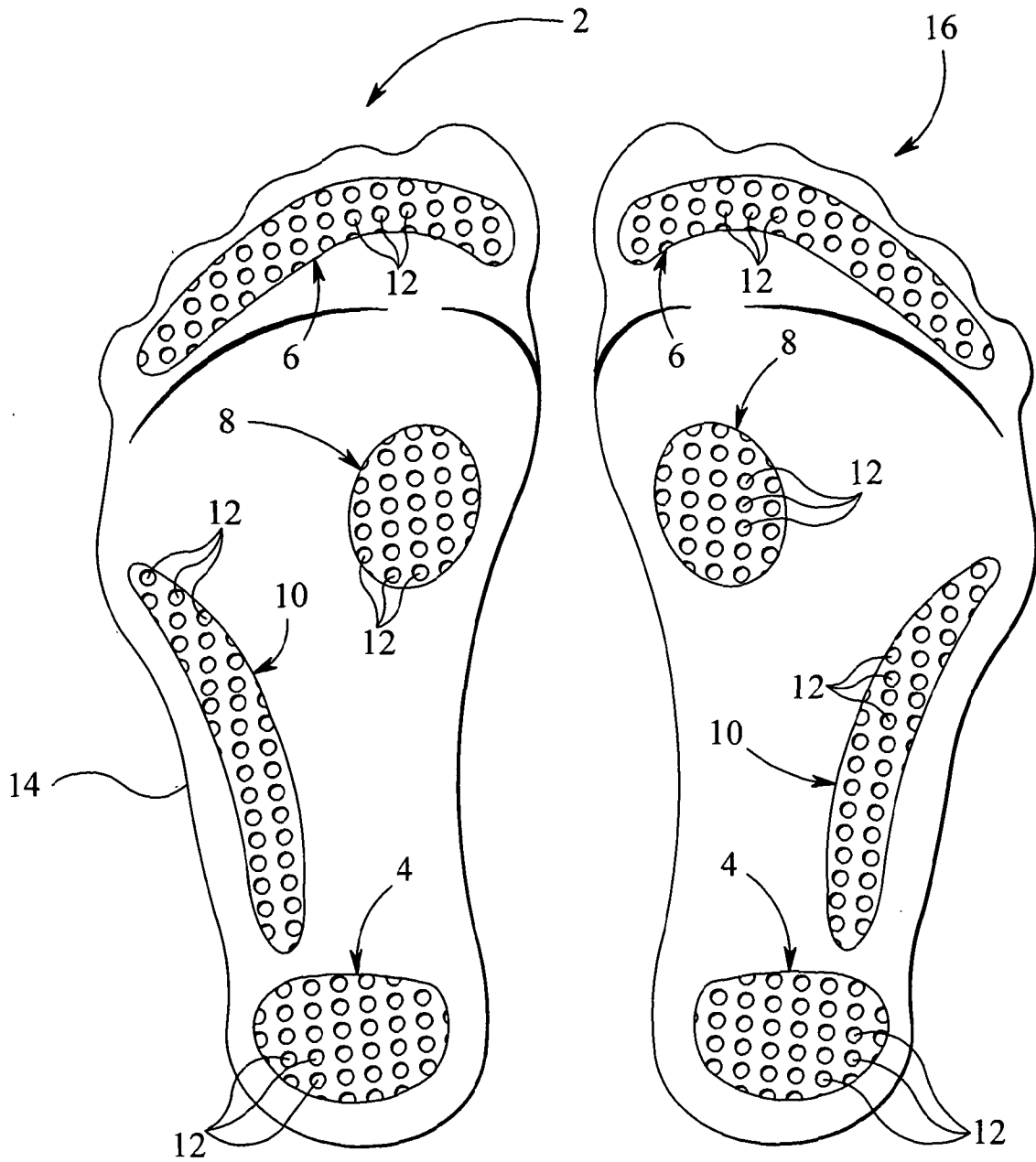
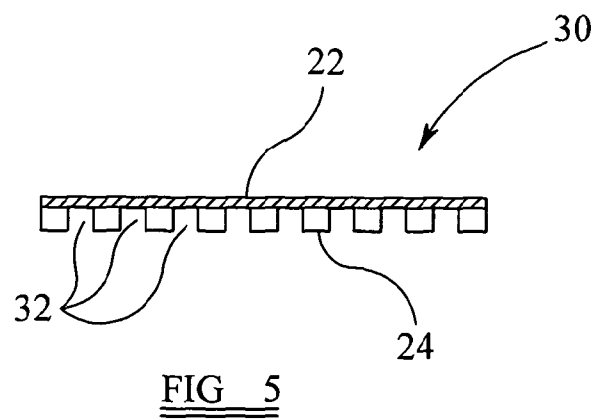
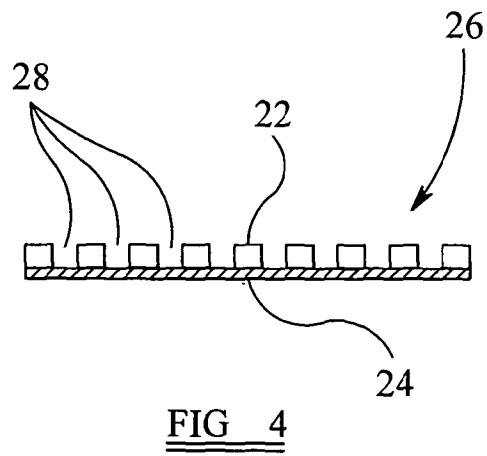
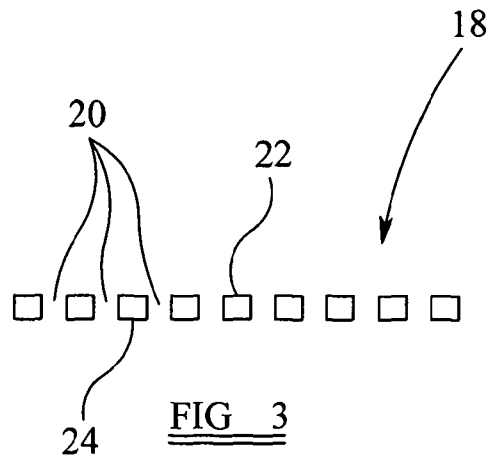


FIG 1

FIG 2

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INTERNATIONAL SEARCH REPORT

International application No

PCT/GB2011/000508

A. CLASSIFICATION OF SUBJECT MATTER

INV. A43B7/14

ADD.

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)

A43B

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

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

EP0-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 201 19 540 U1 (BIRKENSTOCK CHRISTIAN [DE]) 21 March 2002 (2002-03-21) claims 1,2; figures -----	1-18
X	WO 95/28103 A1 (BBC INTERNATIONAL LTD [US]) 26 October 1995 (1995-10-26) claims; figures -----	1-18
X	US 2 033 758 A (CRONAN JOSEPH G ET AL) 10 March 1936 (1936-03-10) claims; figures -----	1-18



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

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"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

15 July 2011

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Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Claudel, Benoît

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2011/000508

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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