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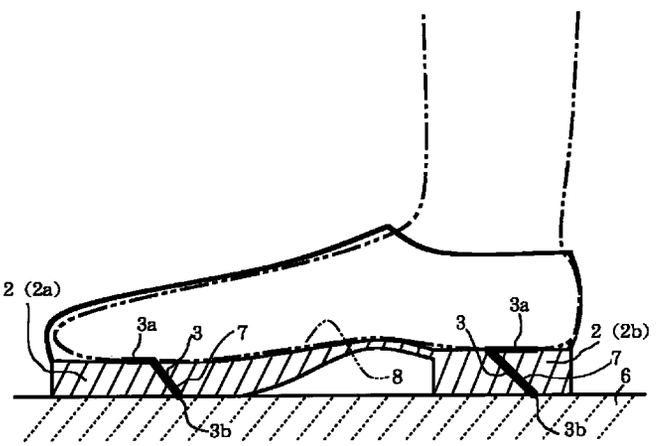
(54) Electrostatic protection shoe

(57) To provide an electrostatic protection shoe which eliminates the accumulation of static electricity in the body or clothes by discharging the static electricity generated in the body or clothes into the ground, floor or the like, a conductive earthing material (3) provided in the sole (2) of the shoe is exposed on the top surface and bottom surface of the shoe sole (2) to interconnect therebetween.

FIG. 1



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Description

This invention relates to an electrostatic protection shoe which discharges static electricity generated in the body or clothes into the ground, floor or the like.

The body may feel an unpleasant shock when static electricity accumulated in the body or clothes is discharged.

It is therefore an object of the present invention to provide an electrostatic protection shoe which prevents static electricity generated in the body or clothes from being accumulated in the body or clothes by continuously discharging static electricity into the ground, floor or the like.

To attain the above object, the electrostatic protection shoe of the present invention discharges static electricity generated in the body or clothes of a person who wears the shoe into the ground by interconnecting the upper surface of the sole of the shoe which is in contact with the sole of a wearer's foot, and the bottom surface of the shoe sole, which is in contact with the ground by means of an earthing material which is an electrically conductive material.

The earthing material may be in the form of a thin plate or wire, and can be exposed and curved along the top surface of the shoe sole without impairing the resiliency of the shoe sole, and does not have an adverse effect on the feeling of the sole of the foot when the shoe is worn.

The earthing material is attached to form a falling gradient toward the rear of the shoe sole, the earthing material exposed on the bottom surface of the shoe sole facing backward with respect to the direction of walking. Therefore, the earthing material extends downwardly and backwardly of the shoe sole, thus eliminating any problem of the earthing material catching on the ground during walking.

Other objects and advantages of the invention will be apparent from the following description, taken in connection with the accompanying drawings, in which:

Figure 1 is a longitudinal sectional view of an electrostatic protection shoe according to the present invention.

Figure 2 is a top view of the sole of the shoe in which a thin plate is used as the earthing material for the shoe sole.

Figure 3 is a top view of the sole of the shoe in which a wire is used as the earthing material for the shoe sole.

Figures 4 (a) and (b) are enlarged sectional views of portions of the shoe of Figure 1 where the earthing material is installed.

In Figure 1, an earthing material 3 is provided in a sole 2 of a shoe. This earthing material 3 is formed of a thin plate 4 (see Figure 2) or wire 5 (see Figure 3) of a conductive metal or carbon or the like.

The earthing material 3 is exposed an the top surface of the shoe sole 2 so that a top portion 3a may contact the sole 8 of a wearer's foot.

A lower end portion 3b of the earthing material 3 is exposed on the bottom surface of the shoe sole 2, the lower end portion 3b of the earthing material 3 being in contact with the ground 6 while the shoe is worn.

More specifically, as shown in Figures 4(a) and (b), a through hole 7 for passing the earthing material 3 therethrough is formed in a toe portion 2a and a heel portion 2b of the shoe sole 2 in such a manner that it has a falling gradient in a rear direction. The earthing material 3 is inserted into this through hole 7 and a top portion 3a of the earthing material 3 is bent along the top surface of the shoe sole 2 and exposed on the top surface.

As described above, since the earthing material 3 is provided in such a manner that it has a falling gradient in a rear direction of the shoe sole 2, i.e. it extends downwardly and rearwardly through the sole 2, the lower end portion 3b of the earthing material 3 is exposed facing backward with respect to the advance direction of walking. Therefore, as a person wearing the shoe walks, the lower end portion 3b of the earthing material 3 does not catvh on the ground.

Further, the earthing material 3 may be bonded to the through hole 7 by an adhesive or a face of the top portion 3a of the earthing material 3 adjacent the top surface of the shoe sole 2 may be bonded to the top surface of the shoe sole 2 by an adhesive. In a preferred arrangement, the extremity 3c of the earthing material 3 is bent over and embedded in the shoe sole 2.

Not one but a plurality of thin plates 4 or wires 5 used as the earthing material 3 may be provided at each location. Figure 3 shows an example wherein two wires 5, 5 are provided in each of the toe portion 2a and the heel portion 2b.

The location where the earthing material 3 is provided is not limited to the toe portion 2a and the heel portion 2b of the shoe sole 2, and may be any location which can keep contact with the sole 8 of the foot.

Since a person usually wears socks when he/she wears the shoes, the sole 8 of the foot contacts the shoe sole 2 through the sock. Static electricity in the body is transmitted through the sock by trace amounts of water contained in the sock so that it is discharged into the ground 6 through the earthing material 3.

As described above by using the electrostatic protection shoe of the present invention, the body is earthed to the ground simply by wearing the shoe. Therefore, static electricity generated in the body or clothes can be discharged into the ground without being accumulated in the body or clothes, thereby completely preventing shocks.

Claims

1. An electrostatic protection shoe wherein a conductive earthing material (3) provided in a shoe sole (2) is exposed on the top surface and the bottom sur-

face of the shoe sole (2) to interconnect therebetween.

2. An electrostatic protection shoe according to claim 1, wherein the earthing material (3) is a thin plate (4).

3. An electrostatic protection shoe according to claim 1, wherein the earthing material (3) is a wire (5).

4. An electrostatic protection shoe according to claim 1, wherein the earthing material (3) is formed to have a falling gradient in a rear direction of the shoe sole (2).

5. An electrostatic protection shoe according to any preceding claim wherein the shoe sole includes a rearwardly and downwardly extending through passage (7), and an electrically conductive earthing material (3) extends through the passage and has an upper portion (3a) lying in contact with the upper surface of the sole (2).

6. An electrostatic protection shoe according to claim 5, wherein an extremity (3c) of the upper portion (3a) of the earthing material (3) is embedded in the shoe sole (2).

FIG.1

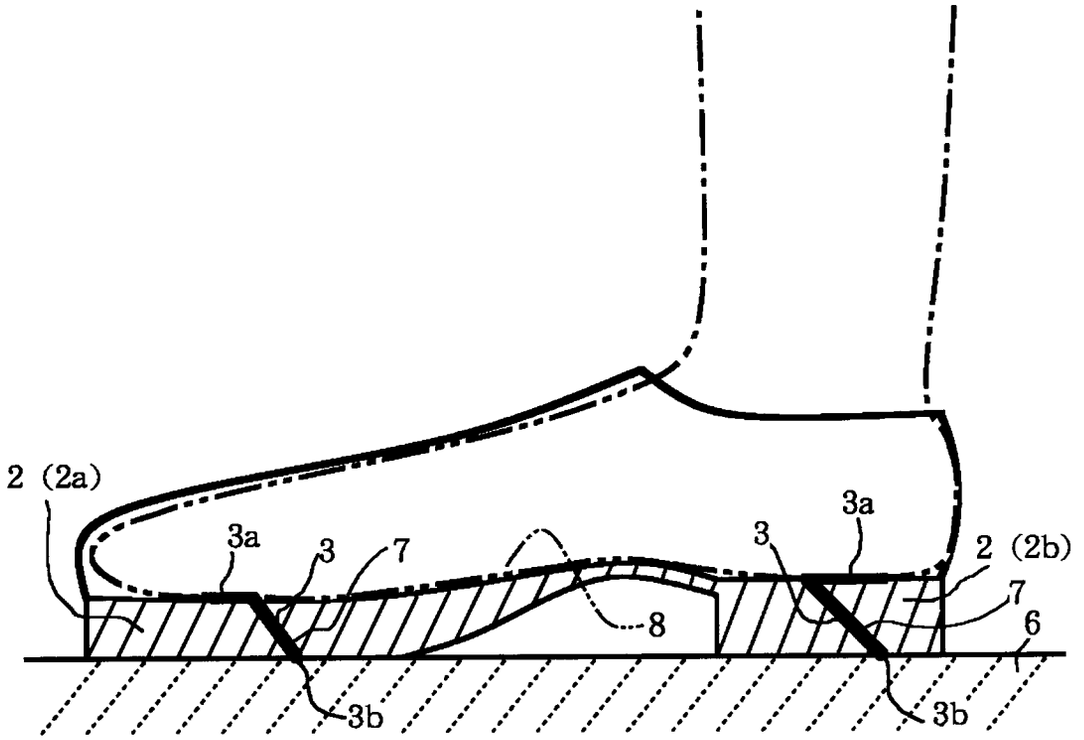


FIG.2

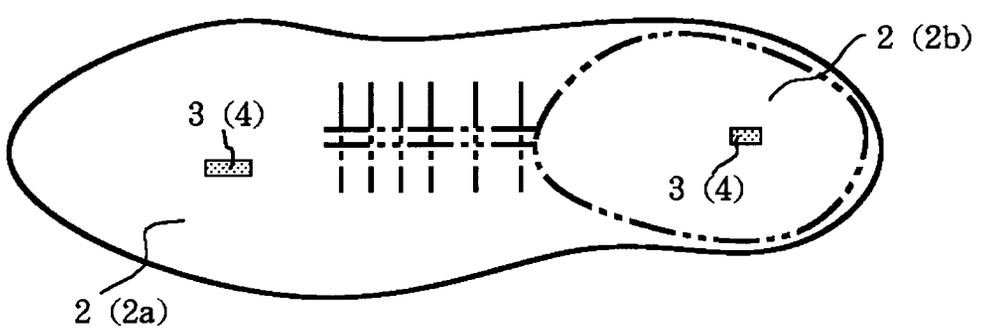


FIG.3

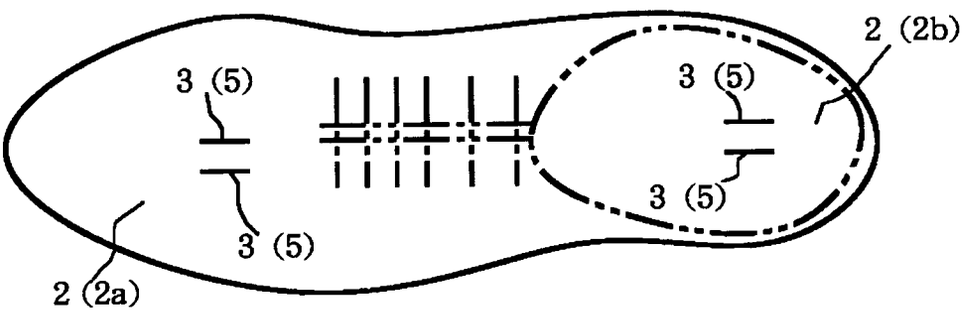


FIG.4(a)

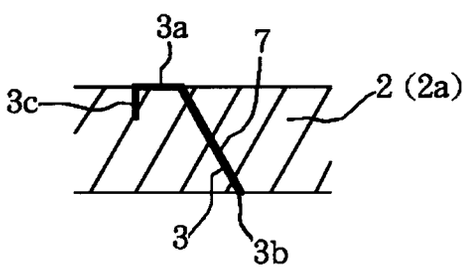
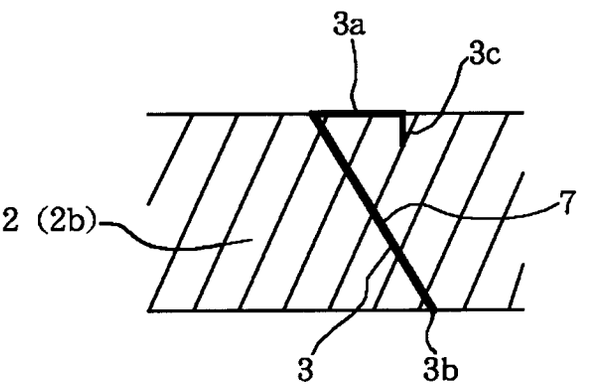


FIG.4(b)



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EUROPEAN SEARCH REPORT

Application Number
EP 96 30 6739

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US 2 904 724 A (M. MFNDOZA) * the whole document *	1,3,5,6	A43B7/36
X	US 4 727 452 A (W. BROWNLEE) * the whole document *	1	
X	DE 31 01 330 A (C. TRAUNBAUER) * the whole document *	1	
X	WO 91 00031 A (M. DINIZ) * the whole document *	1	
X	FR 2 287 244 A (B. MIGNOT) * the whole document *	1	
X	DE 94 15 694 U (OTTER SCHUTZ) * the whole document *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

A43B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	27 May 1997	Declerck, J

CATEGORY OF CITED DOCUMENTS

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