This invention relates to antistatic footwear, such as shoes, boots, sandals and the like. It is a well known fact that health and physical fitness depend to a not inconsiderable extent upon the presence of electrostatic charges. Particularly when the ambient atmosphere is very dry and the electrical conductivity of the air is less than in humid conditions, electrostatic potentials may build up to a sufficient level to be detectable by the generation of audible crackling noises and even by visible electrical discharges.

The build up of electrostatic charges in the human body is often facilitated when rubber or plastics soled footwear is worn which acts as an insulator and inhibits the dissipation of static electricity to the ground. Other reasons responsible for the generation of high electrostatic potentials in the human body are that floors are often covered with rubber or plastics surfacing materials and many people wear rubber- and outerwear which contain man-made fibres. Friction between such wearing apparel and other articles may generate static electricity which is then stored in the human body in the form of an electrostatic charge.

To overcome the above disadvantages, it has already become known to provide the inside of the insole of footwear, such as a shoe, boot, sandal and the like with a metal insertion of good electrical conductivity with which the sole of the foot of the wearer remains in permanent contact, said insertion being connected to electrically conducting elements which reach down to the ground for dissipating electrostatic charges from the body of the wearer into the ground.

The invention can be embodied in diverse ways.

A particularly simple arrangement which is also cheap to provide consists in placing a metal wire into grooves formed into the inside surface of the insole in a zigzag or undular path to and fro across the longitudinal centre line of the insole and in connecting the rear end of the metal wire to an earthing conductor comprising a plurality of fine wires which bear against the heel and extend to the ground.

For achieving an arrangement of fashionable appearance the said conductor may have the form of a bundle 8 of fine metal wires affixed by a staple embracing the wires to the rear of the heel or to the heel cap of the shoe directly above the heel. Alternatively, the conductor may be secreted and the fine metal wires attached to the inside of a patch affixed to the heel cap of the shoe and extending down to the ground bearing loosely against the heel.

If it is desired to secrete the earthing system for dissipating the electrostatic charge in such a way that it cannot be seen at all, a convenient form of construction is one in which the inside of the insole carries a thin metal foil which covers the whole or at least the major part of its surface, said metal foil being electrically conductively connected to the ground by metal studs which pass through the sole and the heel and which have countersunk heads received in conical holes in the insole.

Preferred embodiments of the invention will now be described by way of example and with reference to the accompanying drawings, in which:

**Brief description of the drawings**

FIG. 1 is a longitudinal section through a shoe for men with in insole to which an electrically conducting wire and a heel portion to which an earthing conductor is affixed;

FIG. 2 is a view of the inside of the insole showing a zigzag metal wire provided therein;

FIG. 3 is a back view of the heel of the shoe showing the earthing conductor;

FIG. 4 is a rear view of the heel of a shoe for men with an earthing conductor of different construction;

FIG. 5 is a longitudinal section similar to FIG. 1 of a shoe for men containing a thin metal foil insertion on the inside of the insole, and

FIG. 6 is a plan view of the inside surface of the insole with a metal foil insertion according to FIG. 5.

**Description of the specific embodiments**

As illustrated in FIGS. 1 and 2 the inside surface of the insole 2 of a shoe 1 made in a conventional manner is formed with grooves 3 which zigzag across the longitudinal centre line of the sole. A bare stainless metal wire 4 of good electrical conductivity, such as an aluminium or brass wire, is inserted and adhesively fixed in the grooves. The wire is contained in the grooves 3 so that it is flush with the insole surface, or it may project from the surface by a fraction of a millimetre so that the sole of the foot of the wearer will make contact with the wire without being inconvenienced thereby.

The rear end of the wire 4 is taken through a small hole 6 immediately above the heel 5 at the back of the shoe and attached to a cross wire 7 from which a plurality of fine wires 8 depend. The cross wire 7 and the fine wires 8 are secured to the inside of a leather or like patch 9 which is sewn or cemented to the heel cap of the shoe. The patch 9 bears loosely against the heel 5, its bottom end aligning exactly or nearly with the bottom edge of the heel, whereas the ends of the fine wires 8 slightly project beyond the end of the patch. When the shoe stands on the ground the ends of the fine wires touch the ground. Any electrostatic charge in the wearer's body will therefore be conducted via wire 4 through the fine wires 8 into the ground.

The earthing conductor shown in FIG. 4 consists of a bundle 8 of fine metal wires loosely bearing against the back of the heel 5. The wires are held together by a small staple 10 affixed with the aid of two pins 11 to the top of the heel near its upper edge.

In the embodiment according to FIGS. 5 and 6 a thin flexible metal foil insertion 12 is cemented to the inside surface of the insole 2 and covers the whole or at least the major part of its surface. Metal studs 13 driven from the inside through the metal foil insertion 12, the insole 2 and the heel 5 to the underside of the sole and heel 5 of the shoe provide an electrically conducting connection between the metal foil insertion 12 and the ground.

The metal studs 13 which are distributed over the entire surface of the metal foil insertion 12 have countersunk...
heads 14 which fit into corresponding conical holes in
the insole 2 so that they cannot inconvenience the wearer.
The invention may be embodied in other specific forms
without departing from the spirit or essential character-
istics thereof. The present embodiments are therefore
to be considered in all respects as illustrative and not re-
strictive, the scope of the invention being indicated by the
appended claims rather than by the foregoing description
and all changes which come within the meaning and
range of equivalency of the claims are therefore intended
to be embraced therein.

I claim:

1. Footwear comprising a device for grounding elec-
trostatic charges of the human body comprising at least
one insertion of material of good electrical conductivity
with which the sole of the foot of the wearer remains
in permanent contact, said insertion being connected to
electrically conducting elements which reach down to
the ground for dissipating electrostatic charges from the
body of the wearer into the ground, wherein a metal
wire is contained in grooves formed in the inside sur-
face of the insole in a substantially zigzag shaped path
across the longitudinal centre line of the insole, and the
rear end of the metal wire is connected to an earthing
conductor comprising a plurality of fine wires which bear
against the heel and extend to the ground.

2. Footwear comprising a device for grounding elec-
trostatic charges of the human body comprising at least
one insertion of material of good electrical conduc-
tivity with which the sole of the foot of the wearer
remains in permanent contact, said insertion being con-
ected to electrically conducting elements which reach
down to the ground for dissipating electrostatic charges
from the body of the wearer into the ground, wherein a
metal wire is contained in grooves formed in the inside
surface of the insole in a substantially zigzag shaped
path across the longitudinal centre line of the insole, and
the rear end of the metal wire is connected to an earthing
conductor in the form of a bundle of fine metal wires
affixed by a staple embracing the wires to the rear of the
heel.

3. Footwear comprising a device for grounding
 electrostatic charges of the human body comprising at
least one insertion of material of good electrical con-
ductivity with which the sole of the foot of the wearer
remains in permanent contact, said insertion being con-
ected to electrically conducting elements which reach
down to the ground for dissipating electrostatic charges
from the body of the wearer into the ground, wherein a
metal wire is contained in grooves formed in the inside
surface of the insole in a substantially zigzag shaped
path across the longitudinal centre line of the insole, and
the rear end of the metal wire is connected to an earthing
conductor in the form of a bundle of fine metal wires
affixed by a staple embracing the wires to the heel cap
of the shoe directly above the heel.

4. Footwear as claimed in claim 1, wherein the metal
wires are attached to the inside of a patch affixed to the
heel cap of the shoe above the heel and extending down
to the ground.

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