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CONDUCTIVE ARTICLE OF FOOTWEAR

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FIG. 1

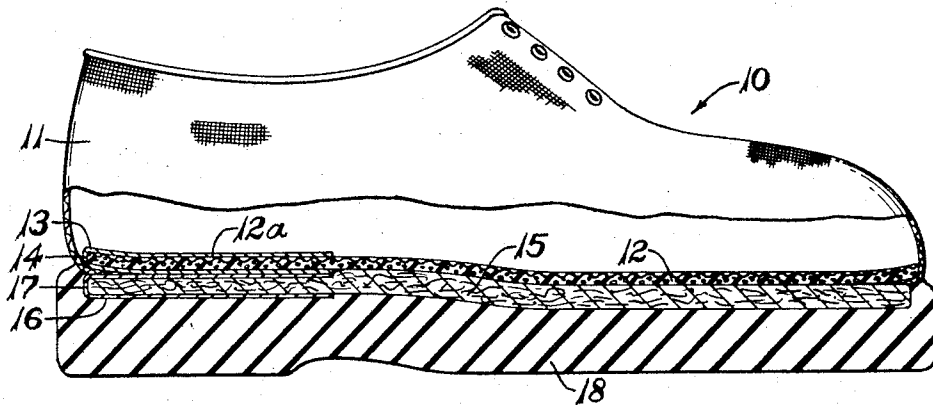


FIG. 2

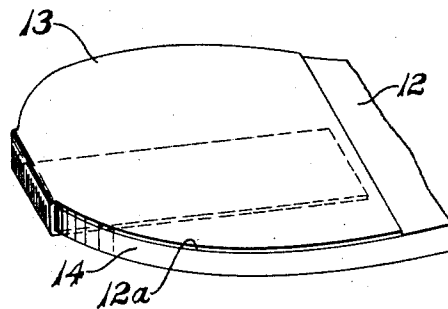
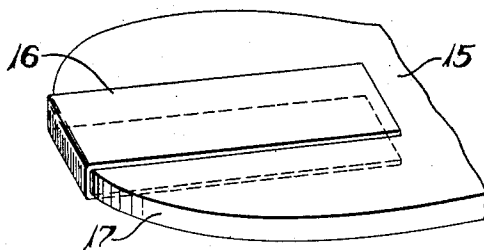


FIG. 3

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CONDUCTIVE ARTICLE OF FOOTWEAR

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5 Claims. (Cl. 317—2)

This invention relates to footwear and pertains more particularly to conductive footwear capable of discharging to the ground electrostatic charges formed in the human body.

Unless static electrical charges gathered by the body are dissipated slowly to the ground as the charges are formed, the body will accumulate an electrostatic charge of such magnitude that the accumulated charge may be discharged in the form of a spark when the person comes in close proximity with an electrically grounded object. The occurrence of a spark discharge in the vicinity of highly combustible materials presents a serious hazard, since an explosion is likely to occur.

It is desirable that people who must work with or close to highly combustible materials wear shoes which are of a conductive nature so that static electrical charges gathered by the body are slowly dissipated to the ground rather than in the form of a spark discharge. Doctors, nurses and other attendants in operating rooms have found the use of conductive shoes helpful in essentially eliminating explosions caused by the ignition of combustible anesthetics used in operating rooms. Workmen handling munitions and other highly combustible materials or working in places in which the air normally may contain a high concentration of combustible materials consider use of conductive footwear essential.

The present invention provides a conductive shoe which not only is comfortable when worn and is economical to manufacture but also efficiently slowly dissipates to the ground static electrical charges gathered by the body.

Reference will be made henceforth to a specific embodiment of this invention. However, it will be understood that the invention is not intended to be limited to this embodiment.

In the drawings:

Fig. 1 is a side elevational view partly broken away and in section of a shoe embodying this invention;

Fig. 2 is a perspective view of an insole with an electrical-conductive member associated therewith as incorporated in the shoe shown in Fig. 1; and

Fig. 3 is a perspective view of a midsole with an electrical-conductive member associated therewith as incorporated in the shoe shown in Fig. 1.

Referring to the drawings, shoe 10 comprises an upper 11 which may be formed of cloth, leather or suitable flexible plastic, cloth being shown, and an insole 12 of conventional construction. An electrical-conductive member 13 is associated with insole 12 so that member 13 overlies at least a portion of the upper face of insole 12 and extends around the edge face 14 of insole 12 and under at least a portion of the bottom face of insole 12, as shown in Figs. 1 and 2. If desired, member 13 may be cemented or otherwise secured to insole 12. A midsole or platform sole 15 is disposed beneath insole 12 and has associated therewith an electrical-conductive member 16 which overlies at least a portion of the upper face of midsole 15 and extends around the edge face 17 of midsole 15 and under at least a portion of the bottom face of midsole

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15, as shown in Figs. 1 and 3. The portion of member 13 underlying insole 12 and the portion of member 16 overlying midsole 15 are disposed in opposed face-to-face relationship and are either in direct contact with each other or are connected by an electrical-conductive material, such as by a layer of electrical-conductive adhesive disposed therebetween for adhering the opposing faces of member 13 and member 16 together, so that member 13 is electrically interconnected with member 16. An electrical-conductive heel and outsole assembly 18 forms the tread portion of shoe 10 and extends beneath midsole 15 and encompasses the edge face 17 of midsole 15. Heel and outsole assembly 18 is either in direct contact with the portion of member 16 underlying midsole 15 or is electrically interconnected therewith by an electrical-conductive material, such as a layer of electrical-conductive adhesive.

In place of the unitary heel and outsole assembly 18 shown in Fig. 1, the heel and outsole of shoe 10 may be separated members. If the heel and outsole of shoe 10 are separate members, only the outsole needs to be made of an electrical-conductive material.

Electrical-conducting members 13 and 16 and the heel and outsole assembly 18 may be formed of any suitable electrical-conductive material, such as electrical-conductive rubber or leather treated to render the leather electrical-conductive.

The shapes of electrical-conductive members 13 and 16 can be varied considerably. However, the portion of member 13 overlying the upper face of insole 12 preferably has the general configuration of a heel pad and overlies the entire heel region 12a of insole 12, as shown in Fig. 2.

Shoe 10 may be constructed in the following manner. Insole 12 with electrical-conductive member 13 adhered thereto with a suitable adhesive is placed on a last and upper 11 is lasted with insole 12 and member 13 by adhering the bottom margin of upper 11 to insole 12 and to member 13. Midsole 15 with electrical-conductive member 16 adhered thereto with a suitable adhesive is assembled with heel and outsole assembly 18. The construction consisting of midsole 15, member 16 and heel and outsole assembly 18 then is associated with the heretofore assembled members of the shoe with the portion of member 13 underlying insole 12 opposing the portion of member 16 overlying midsole 15 in face-to-face contacting relation, the directly opposing faces of insole 12 and midsole 15 being adhered together with adhesive if desired. The assembled shoe then is subjected to heat to vulcanize the rubber constituents of the shoe, if required.

It will be seen from the above description that the shoe of this invention, when worn is capable of safely discharging static electrical charges from the body by transmitting the charge from the body to the ground through members 13 and 16 and heel and outsole assembly 18 which are in electrical interconnection.

If desired, midsole 15 and electrical-conductive member 16 can be eliminated from the shoe construction. If a shoe having no midsole is to be formed, the heel and outsole assembly 18 can be disposed directly beneath insole 12 and the portion of electrical-conductive member 13 underlying the bottom face of insole 12, the heel and outsole assembly 18 being electrically interconnected with the portion of member 13 underlying insole 12.

It is clear that many modifications and variations of this invention may be made without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. A article of footwear comprising an upper, an insole, an electrical-conductive member overlying at least a portion of the upper face of said insole and extending

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over the edge face of said insole and under at least a portion of the bottom face of said insole, a midsole disposed beneath said insole, an electrical-conductive member overlying at least a portion of the upper face of said midsole and extending over the edge face of said midsole and under at least a portion of the bottom face of said midsole, the first-mentioned said electrical-conductive member being electrically interconnected with the second-mentioned said electrical-conductive member, and an electrical-conductive outsole, said outsole being electrically interconnected with the second-mentioned said electrical-conductive member.

2. An article of footwear comprising an upper, an insole, an electrical-conductive member overlying at least a portion of the upper face of said insole and extending over the edge face of said insole and under at least a portion of the bottom face of said insole, a midsole disposed beneath said insole, an electrical-conductive member overlying at least a portion of the upper face of said midsole and extending over the edge face of said midsole and under at least a portion of the bottom face of said midsole, the portion of the first-mentioned said electrical-conductive member underlying the bottom face of said insole and the portion of the second-mentioned said electrical-conductive member overlying the upper face of said midsole being in opposed face-to-face relation and adhered together with an electrical-conductive material, and an electrical-conductive outsole, said outsole being electrically interconnected with the second-mentioned said electrical-conductive member.

3. An article of footwear comprising an upper, an insole, an electrical-conductive member overlying at least a portion of the upper face of said insole and extending over the edge face of said insole and under at least a portion of the bottom face of said insole, a midsole disposed beneath said insole, an electrical-conductive member overlying at least a portion of the upper face of said midsole and extending over the edge face of said midsole and under at least a portion of the bottom face of said midsole, the portion of the first-mentioned said electrical-conductive member underlying the bottom face of said insole and the portion of the second-mentioned said electrical-conductive member overlying the upper face of said midsole being in opposed face-to-face contact, and an electrical-conductive outsole, said outsole being electrically interconnected with the second-mentioned said electrical-conductive member.

4. An article of footwear comprising an upper, an insole, an electrical-conductive member overlying the upper

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face of said insole and extending over the edge face of said insole and under at least a portion of the bottom face of said insole, the portion of said electrical-conductive member overlying the upper face of said insole having the general contour of a heel pad and overlying the heel portion of said insole, a midsole disposed beneath said insole, an electrical-conductive member overlying at least a portion of the upper face of said midsole and extending over the edge face of said midsole and under at least a portion of the bottom face of said midsole, the portion of the first-mentioned said electrical-conductive member underlying the bottom face of said insole and the portion of the second-mentioned said electrical-conductive member overlying the upper face of said midsole being electrically interconnected, and an electrical-conductive outsole, said outsole being electrically interconnected with the portion of the second-mentioned said electrical-conductive member underlying the bottom face of said midsole.

5. An article of footwear comprising an upper, an insole, an electrical-conductive member overlying the upper face of said insole and extending over the edge face of said insole and under at least a portion of the bottom face of said insole, the portion of said electrical-conductive member overlying the upper face of said insole having the general contour of a heel pad and overlying the heel portion of said insole, a midsole disposed beneath said insole, an electrical-conductive member overlying at least a portion of the upper face of said midsole and extending over the edge face of said midsole and under at least a portion of the bottom face of said midsole, the portion of the first-mentioned said electrical-conductive member underlying the bottom face of said insole and the portion of the second-mentioned said electrical-conductive member overlying the upper face of said midsole being electrically interconnected, and an electrical-conductive unitary heel and outsole member, said heel and outsole member being electrically interconnected with the portion of the second-mentioned said electrical-conductive member underlying the bottom face of said midsole.

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