Sept. 20, 1966 J. R. PEEL 3,274,442

CONDUCTIVE FOOTWEAR

Filed Nov. 19, 1963

Fig. 1.

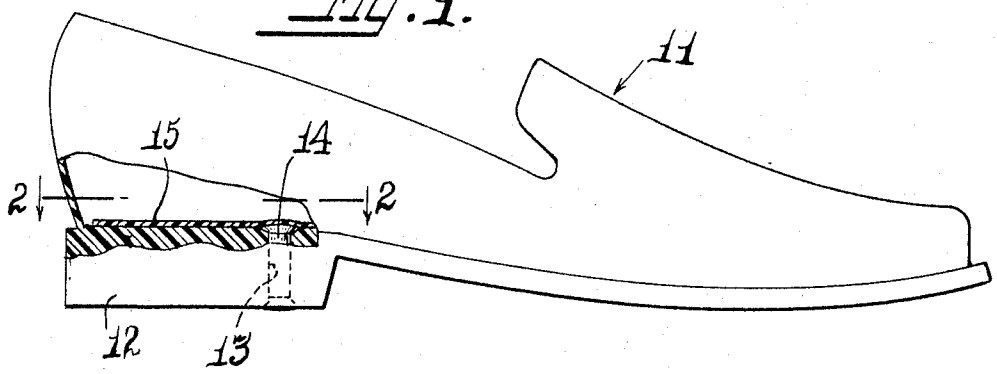


Fig. 2.

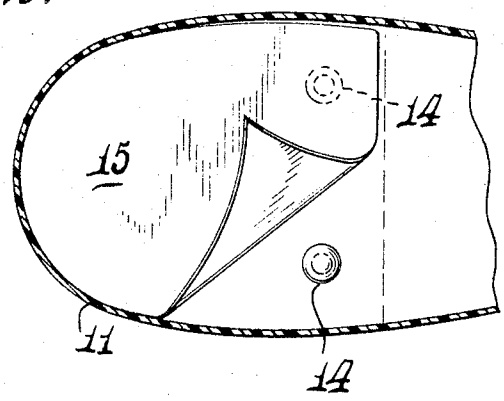
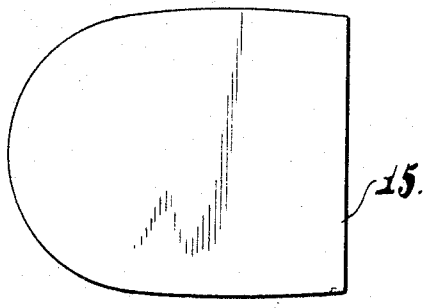


Fig. 3.



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CONDUCTIVE FOOTWEAR

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1 Claim. (Cl. 317—2)

The invention relates to improvements in electrically conductive footwear and is more particularly concerned with the construction and assembly of a shoe for the control of static electricity.

Shoes of this character are particularly useful to surgeons and other persons in operating rooms where the danger of electrostatic sparking, resulting from static accumulation in the human body, is ever present, and by laboratory technicians operating electrical apparatus, such as X-ray machines. The surface of the floor in such locations has electrical conductivity to provide a path for grounding any dangerous electrostatic charges.

In use, the function of the electrically conductive shoe is to permit substantially instantaneous discharge through the shoe directly to the floor surface which constitutes a discharge body for the condenser action of the human body. It is established that different uses of the footwear may require variations in the resistance of the shoe to ground. Heretofore, footwear of this general character has been fabricated from leather and provided with an outer sole of electrically conductive material and an insole of like material electrically connected to the outsole so as to provide a direct ground from the body to the conductive floor surface. Such structure is objectionable primarily because the outer sole accumulates a layer of dirt or other foreign particles which reduces and sometimes negatives its effectiveness as a grounding agent.

In the conductive footwear of the present invention the conductive qualities of the shoe can be varied by selection of a sheet of electrically conductive material, such as conductive rubber or vinylfilm, of different thickness for installation within the shoe and in direct contact with electrical conductors passing through the shoe to the floor surface.

By locating the electrical conductors in the heel of the shoe, good contact with ground is assured because there is less likelihood of the exposed ends of the conductors becoming impaired by the accumulation of dust, wax or other foreign matter on the bottom ends thereof. Also, the electrical conductors or plugs have a very firm mounting owing to the thickness of the heel as compared with the sole of the shoe.

It is therefore an object of the invention to provide conductive footwear wherein the electrical conductors are arranged in the shoe for direct contact with a conductive floor surface.

Another object is to provide novel means in conductive footwear to permit variance in the resistance to ground.

Another object is to provide conductive footwear with a novel resistance element.

The structure by means of which the above noted and other objects and advantages of the invention are attained will be described in the following specification, taken in conjunction with the accompanying drawings, showing a preferred illustrative embodiment of the invention, in which:

FIG. 1 is a side elevational view of a shoe embodying the invention and showing a portion thereof broken away and in section.

FIG. 2 is a fragmentary horizontal sectional view of the shoe, taken substantially on line 2—2 of FIG. 1, showing the resistance sheet partially lifted.

FIG. 3 is a view of the resistance sheet.

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Referring to the exemplary disclosure of the invention as shown in the accompanying drawings, the shoe 11 preferably is fabricated from durable rubber or rubber like composition although it may be made generally of other material such as leather or fabric. The heel 12 is provided with a pair of laterally spaced holes 13 in which are fitted firmly a pair of electrical conductors 14. These conductors, which preferably are formed of non-ferrous metal, extend entirely through the heel from the outside surface thereof to the inside surface so as to have both ends exposed.

The electrical conductors 14 function to ground the wearer with the conductive floor surface. In order to vary the resistance to grounding to a desired amount of ohms, the shoe, and specifically the heel portion thereof, is lined with a thin film or sheet 15 of conductive rubber, rubber-like composition or vinyl plastic material. For example, it has been established that rubber sheeting of the kind manufactured by the Plymouth Rubber Co., and identified by it as Stock #02–1819–05, is very efficient for the intended purpose. This material is available in gauges of from .004 inch to .028 inch thickness. When in place in the shoe it lies flat over and has direct mechanical and electrical contact with the inner ends of conductors 14.

It should be apparent that upon judicious selection of sheeting of the proper gauge, the ohm resistance to ground can be varied to suit various use requirements.

Although I have described a preferred embodiment of my invention, in considerable detail, it will be understood that the description thereof is intended to be illustrative, rather than restrictive, as many details of the structure disclosed may be modified or changed without departing from the spirit or scope of the invention. Accordingly, I do not desire to be restricted to the exact construction described.

I claim:

A static discharging shoe including a sole and a heel portion, a thin layer of electrically conductive material overlying the inside surface of the heel portion only, said electrically conductive material being adapted to have direct contact with the heel of the wearer, an electrically conductive element extending through the heel portion and having electrical contact at one of its ends with the electrically conductive material, said electrically conductive element having its other end exposed on the outside bottom face of said heel portion, the conductivity of said thin layer of electrically conductive material varying significantly in accordance with changes in thickness of the material of several thousandths of an inch, said thin layer of electrically conductive material having a predetermined conductivity established by the thickness of the material employed, said thickness being selected in accordance with the conductivity desired.

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