

Feb. 1, 1955

S. LEWIS ET AL

2,701,323

ELECTRICALLY CONDUCTIVE ARTICLE OF FOOTWEAR

Filed March 4, 1952

Fig. 1.

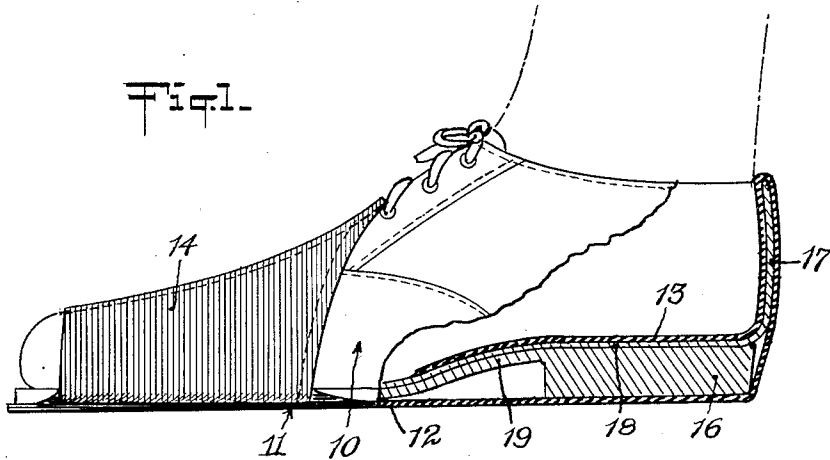
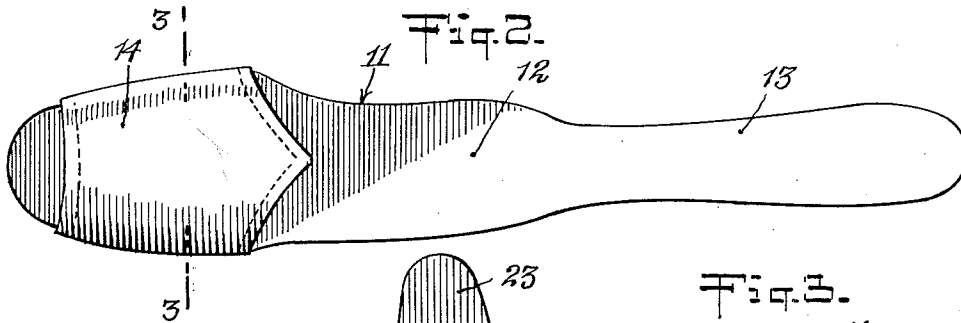


Fig. 2.



7:30

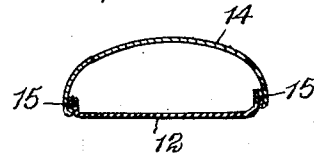
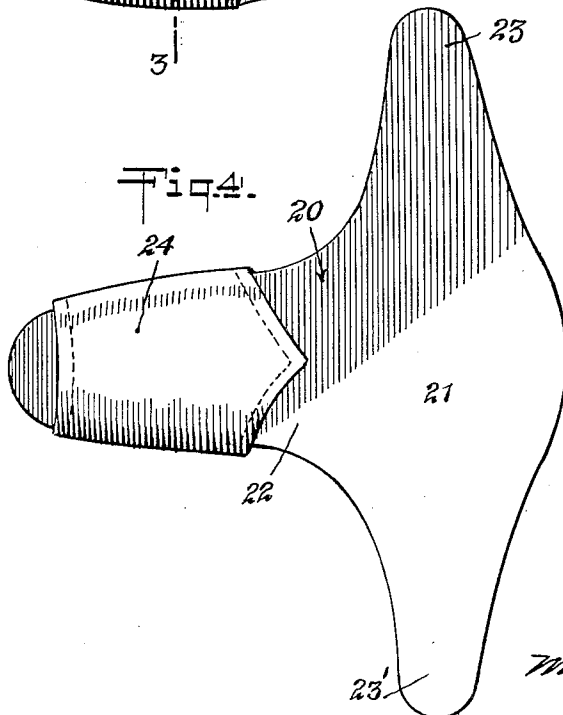


Fig. 4.



INVENTORS
Sidney Lewis and
 BY *John J. Bodnar*
Munn, Liddy & Nathanson
 Attorneys

1

2,701,323

ELECTRICALLY CONDUCTIVE ARTICLE OF FOOTWEAR

Sidney Lewis, Forest Hills, and John J. Bodnar, White Plains, N. Y., assignors to Melrose Hospital Uniform Co., Inc., Brooklyn, N. Y., a corporation of New York

Application March 4, 1952, Serial No. 274,802

3 Claims. (Cl. 317—2)

The present invention relates to conductive footwear and, more particularly, to a conductive wrapper designed to be worn partially outside and partially inside an ordinary non-conductive footwear.

In order to avoid other explosions during an operation, doctors and nurses are required to remove and exchange their ordinary non-conductive street shoes for conductive shoes before entering the operating room. Moreover, others who work in the presence of explosive vapors, gases, dust, and the like, must also wear special conductive shoes. These special conductive shoes have many disadvantages. They are inconvenient due to necessity for exchange from normal street shoes. Moreover, many of these special conductive shoes are uncomfortable due to their particular shape or size and, of course, they are always generally expensive.

The principal object of the present invention is to provide a conductive wrapper which is worn with an ordinary non-conductive shoe for use by nurses, doctors and others who are exposed to the presence of explosive gases, vapors or dust, and which wrapper is provided with means whereby the body of the wearer is effectively grounded at all times so as to prevent an igniting spark due to electrostatic discharge.

It is a further object of the present invention to provide a conductive wrapper having a relatively large flap which may be disposed between the stockinged foot of the wearer and the inner sole of the ordinary non-conductive shoe, which flap serves to facilitate the passage of static charges from the body of the wearer to the ground, and which flap due to its position in the shoe prevents slippage of the slipper.

An additional object of the present invention is to provide a conductive wrapper to be worn with an ordinary non-conductive shoe and which may be placed over the ordinary non-conductive shoe in a matter of a few seconds and with a maximum of ease.

A still further object of the present invention is to provide a conductive wrapper which may be worn with various size non-conductive shoes.

Moreover, it is an object of the present invention to provide a conductive wrapper to be worn with a non-conductive shoe which is of simple construction and which can be produced at a cost much less than that of the aforementioned special type conductive shoes.

Other objects and advantages of the present invention will become more apparent as it is described below in detail with particular reference to the accompanying figures, wherein

Figure 1 is an elevational view in partial section, showing the conductive wrapper of the present invention worn over an ordinary non-conductive shoe, and further showing how the body of the wearer is grounded by the conductive slipper;

Fig. 2 is a plan view of the conductive wrapper comprising the present invention;

Fig. 3 is a sectional view taken on line 3—3 of Fig. 2; and

Fig. 4 is a plan view of a modified form of the present invention.

In accordance with the present invention, we have provided a conductive wrapper adapted to be worn with an ordinary non-conductive shoe comprising a sole portion, a vamp portion, and a flap portion extending outwardly from the sole portion, which sole and flap portions establish a conductive path for static charges.

With particular reference to Figure 1, there is shown

2

a conductive wrapper 11 adapted to be worn over an ordinary non-conductive shoe 10. The wrapper 11 has a sole portion 12 which conforms to the general outline of the bottom of a conventional shoe. A flap portion 13 is attached to the rear of the sole portion 12 and extends rearwardly and outwardly thereof. The flap portion may be an integral part of said sole portion, as shown in Fig. 2, or it may be a separate piece of material fastened to said sole portion in any well known or suitable manner. Both the sole portion 12 and flap portion 13 are made of a conductive material so that static charges may pass easily therefrom to the ground.

As shown in Fig. 2, the shape of the sole portion 12 is made to conform with the general shape of the bottom of an ordinary shoe and the flap 13 may consist of a strip of material which is narrower than the sole 12. The length and width of the flap 13 will depend upon the various sizes of the wrapper 11 that are manufactured, but in any event the surface area of the flap should be large enough so that sufficient contact is established with the stockinged foot of the wearer. Since a wrapper such as we have shown does not have to conform rigidly in size and shape to the shoe of the wearer, it is only necessary that several sizes such as small, medium and large be manufactured.

A strip 14 of non-conductive material, such as ordinary canvas, is attached to the sides of the front of the sole portion 12 by means of stitching 15. This strip 14 serves as a vamp for the wrapper and is adapted to encircle the front top portion of the shoe 10, when the wrapper is worn.

When the wrapper 11 is in position over the shoe 10, as seen best in Fig. 1, the sole portion 12 extends the length of the bottom of the shoe and is in contact with the ground. At the same time, the flap 13 extends upwardly from the rear of the heel 16 of the shoe along the back of the heel casing 17, then down the inner portion of the back of the heel casing and along the innersole 18 until it overlies the shank portion 19 of the shoe. Thus any static charges that have accumulated on the body of the wearer, are able to pass from his foot to the flap 13, then along the flap 13 to the sole portion 12, and thence to the ground thus effectively preventing any sudden electrostatic discharge which might result in sparking.

When placing the wrapper 11 on the shoe, the wearer simply unloosens the laces of the shoe and lifts his heel out of the shoe. Then he passes the front portion of the shoe between the strip 14 and the sole 12 and tucks the flap 13 into the shoe so that it overlies the shank portion 19. The wearer then replaces his heel into the shoe 10 and refastens the laces. As the wearer replaces his heel into the shoe 10, he causes the flap 13 to assume the position shown in Fig. 1.

Figure 4 represents a modified form of the present invention wherein there is shown a conductive wrapper 20 having a generally T-shaped portion 21 which is made of the same aforementioned conductive material. This T-shaped portion 21 comprises a sole portion 22 and two side flaps 23 and 23', all of which are integrally joined together. A strip of non-conductive material 24 is connected to both sides of the front of the sole portion 21 so as to form a vamp.

When wrapper 20 is in position on the foot of the wearer, the side flaps 23 and 23' extend up along the sides of the heel casing of the street shoe and then down into the shoe so that the flaps are superimposed over the heel portion of the shoe.

With the wrapper shown in both forms of the invention, it can be readily seen that there will be no slippage of the wrapper since the wearer is continually standing upon either the extension portion 13 or the side flaps 23 and 23'.

At the same time, it can be readily seen in both cases that a relatively large contact area is provided between the foot of the wearer and the wrapper 11 so that there is a readily accessible path for static charges to flow from the body of the wearer to the ground.

The conductive material from which the sole and flap portions are made may be a conductive rubber material or thin flexible leather, which has been specially treated to render it conductive. For that matter any thin

3

flexible conductive material may also be employed in the wrapper.

While the invention has been described in detail and shown with respect to the accompanying drawings, it is not to be limited to such details, since many changes and modifications may be made in the invention without departing from the spirit and scope thereof. Hence, it is desired to cover any and all forms and modifications of the invention which may come within the language and scope of any one or more of the appended claims.

We claim:

1. A grounding device for attachment to a wearer's shoe comprising a foldable strip of flexible fibrous electroconductive material having a front sole portion shaped for conforming substantially to the bottom of the outer sole of the shoe and a rear extended portion, a vamp formed of pliable material secured to the said front sole portion at opposite sides thereof and near the front end of said front portion and forming a loop of increasing cross sectional area along the length of said strip from front to rear, the loop being proportioned for engaging the vamp of the shoe and holding the front sole portion of the strip in mating engagement with the bottom of the out sole of the shoe, said rear extended portion of said strip having a width substantially at least as great as the heel of the shoe, and length for underlying the

4

heel, with an extension for folding upward over the outside of the vertical heel portion of the shoe, across the edge thereof, downward along the inside surface into engagement with the insole of the shoe, and horizontally over the insole for forming an electrical connection between the upper surface of the insole and the bottom surface of the outsole.

2. The structure of claim 1 wherein the extended portion of said strip is formed along the longitudinal axis of the strip for folding directly over the rear surface of the upper heel portion.

3. The structure of claim 1 comprising two extensions, one extending laterally outward on each side of said strip and both of which are foldable upward on the outside of the vertical portion of the shoe across the edge thereof, downward along the inside surface of the shoe and into engagement with the insole of the shoe over the insole.

References Cited in the file of this patent

UNITED STATES PATENTS

497,822	Royer	May 23, 1893
1,940,491	Freitag	Dec. 19, 1933
2,279,094	Siers	Apr. 7, 1942
2,287,744	Monahan	June 23, 1942