

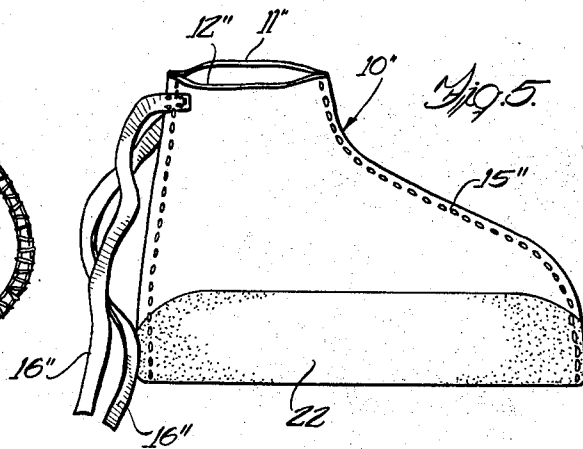
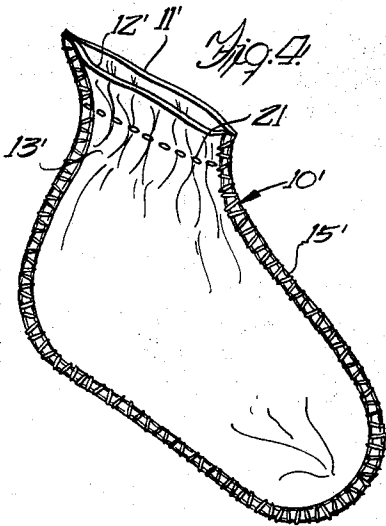
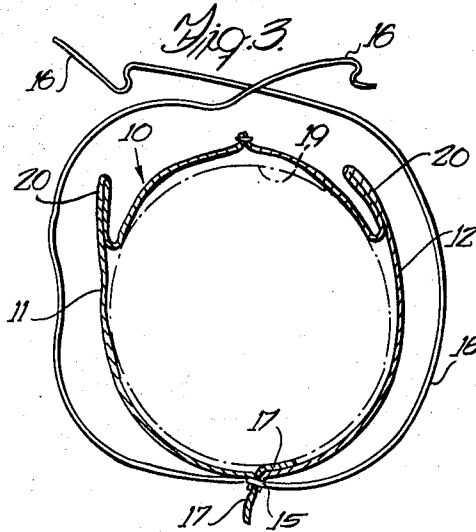
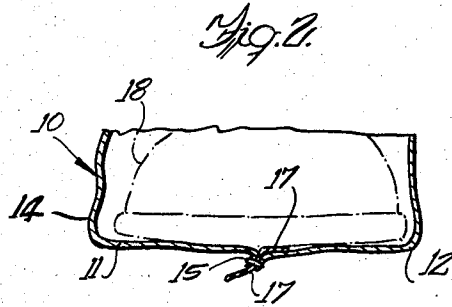
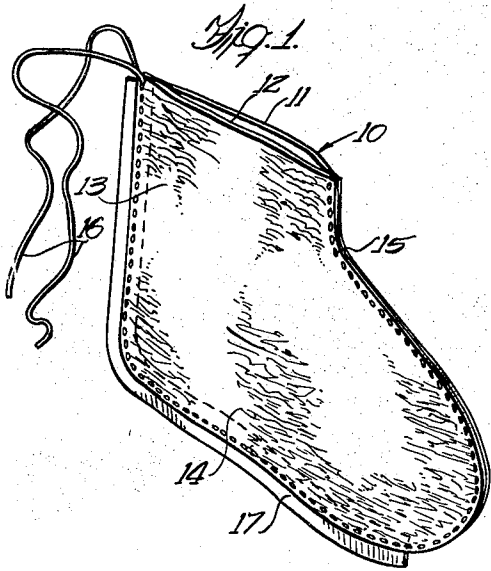
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DISPOSABLE CONDUCTIVE SHOE COVER

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DISPOSABLE CONDUCTIVE SHOE COVER

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5 Claims. (Cl. 317-2)

This invention relates to a disposable shoe cover, and more specifically, to a disposable boot which is electrically conductive and which is particularly suited for use in operating rooms.

This invention relates to a shoe cover for use where it is desired to conduct static electricity from the wearer to a conductive surface, such as the conductive floors installed in surgical operating rooms. The cover not only provides a bacterial barrier so that virulent organisms and soil from the shoes of a surgeon or his assistants are not permitted to escape into the atmosphere but also provides an electrical path from the wearer to a conductive surface so that dangerous discharges of static electricity are drained off.

While electrically conductive and protective footwear for operating room use has been known in the past, such footwear has been generally unsatisfactory for various reasons. For one thing, prior boots have been relatively heavy and expensive. As reusable items, they require frequent washing and sterilization which add further to their expense and inconvenience of use. Furthermore, the fact that such boots must be collected and cleaned after an operation rather than destroyed by incineration increases the possibilities of contamination, particularly of those who must handle such articles.

Accordingly, it is a principal object of the present invention to provide a protective shoe covering of simple and inexpensive construction so that the cover may be discarded after a single use, thereby eliminating the need for handling and cleaning a contaminated item. Another object is to provide a disposable shoe cover which is equipped with means for assuring an electrically conductive path from the wearer to a floor surface. In this regard, it is a specific object to provide a cover capable of conducting static electricity to a floor surface whether the wearer is or is not wearing electrically conductive shoes. Another object is to provide a conductive disposable boot which completely encloses the foot and shoe of a wearer, thereby protecting the wearer against contamination by blood or body fluids which might spill upon the feet while at the same time effecting complete containment of any bacteria upon the wearer's feet and shoes.

Other objects will appear from the specification and drawings in which:

FIGURE 1 is a perspective view of a disposable conductive shoe cover embodying the present invention;

FIGURE 2 is a broken cross sectional view illustrating the relationship of parts when the cover is worn;

FIGURE 3 is a horizontal sectional view indicating the relationship of parts as the cover is tied in place about a wearer's ankle;

FIGURE 4 is a perspective view illustrating a second embodiment of the invention;

FIGURE 5 is an elevational view of a third embodiment of the invention.

In the structure illustrated in FIGURES 1 through 3 the numeral 10 generally designates a boot or shoe cover formed from an inexpensive and combustible sheet material. While other materials might be used, paper has been found highly effective and it is with a boot formed of such material that the present invention is primarily concerned. The paper should be sufficiently strong to withstand the substantial forces likely to arise when a wearer

moves about and should be creped or pre-wrinkled to provide minute ridges and depressions for the purpose of reducing noise and improving the folding and wearing properties of the paper as the boot is fitted and worn by a user.

The boot of FIGURE 1 is formed from two panels or sections 11 and 12 of paper. Each of the panels is formed to provide ankle and foot portions 13 and 14 so that when the boot is worn it will fully cover the foot and ankle of the wearer.

The two panels or sections are sewn together along all edges except their top edges which are left separable for putting on and removing the boot. As shown in FIGURE 1, stitching 15 extends along the front edges of the ankle and the shoe portions, then along the sole of the shoe portion, and finally up the back edge of the boot, terminating in free end portions 16 for use as tie strings. Thus, when the boot is worn, the stitching extends along the vertical longitudinal mid plane of the wearer's foot.

Along the bottom and back seam of the boot 10 is a strip 17 of electrically-conductive metal or plastic material. It will be observed that the strip is sandwiched between the two panels of the boot and is held in place by stitching 15 which extends along the longitudinal mid line of the strip. The strip is substantially wider than the distance between the line of stitching and the bottom and rear edges of sections 11 and 12 so that the strip extends outwardly from between the paper sections, as shown clearly in FIGURE 1. Furthermore, the electrically-conductive strip projects into the interior of the boot for reasons which will appear shortly.

Strip 17 may be formed from metal foil, from metal-impregnated or woven cloth, from metalized paper or from a suitable electrically-conductive plastic material. The important requirements are that the material be electrically-conductive and be yieldable or flexible rather than brittle. In addition, the strip must be sufficiently durable to remain intact for a single use.

When the boot is fitted upon a shoe the parts assume the relationship figuratively illustrated in FIGURES 2 and 3 of the drawings. In FIGURE 2, the numeral 18 designates a shoe and it will be observed that the sole of that shoe engages that portion of strip 17 disposed along the inside surface and along the bottom of the boot. Since the externally-disposed portion of strip 17 extends downwardly from the sole of the boot, the strip in effect constitutes an electrically-conductive wiper element for draining off charges of static electricity from the shoe of a wearer. The electricity simply flows through or along the conductive strip to the conductive floor surface of the operating room. The dangers of static build up and sparking in the vicinity of the highly explosive gases used in operating rooms is thereby eliminated or greatly reduced.

FIGURE 3 illustrates how the disposable boot is held in place upon a wearer's foot. Numeral 19 designates the cross sectional outline of a wearer's ankle or lower leg portion. In fitting and securing the boot, the user simply folds or tucks the paper sides thereof as indicated at 20 and then brings the tie bands 16 forwardly about the sides of the boot's ankle portion as indicated in the drawing. When the bands are drawn tight and tied together, it is believed apparent that the inner surfaces of the boot's ankle portion 13 are urged into snug contact with a wearer's leg or ankle. The inner portion of the conductive strip along the back seam of the boot is pulled into contact with the wearer's leg so that there is a direct path for the flow of electric current from the wearer's skin or clothing to the conductive floor surface. Thus, the tie bands not only hold the boot in place but also insure the draining off of static electricity. Since strip 17 may make direct contact with the wearer's leg, a proper grounding

will occur even though shoes 18 are not electrically conductive.

In the embodiment of the invention illustrated in FIGURE 4, the tie bands 16 are eliminated. Instead, boot 10' is provided with an elasticized ankle portion 13'. In the illustration given, this is accomplished by circumferentially stitching the ankle portion of the boot with one or more elastic bands or threads 21.

The paper panels 11' and 12' of boot 10' are connected by stitching 15' which extends along the front, bottom and rear portions of the boot and along the vertical longitudinal mid plane thereof. Unlike the boot of the first embodiment, boot 10' does not have an electrically-conductive strip sandwiched between the panels or sheets thereof. Instead, stitching 15' is composed of a suitable metallic or plastic thread which is electrically conductive. The electrically-conductive stitching 15' contacts both the wearer's shoe and the floor surface and thereby conducts electrical charges to that surface. In addition, the elastic band 21 tends to draw the stitching 15' of the boot's ankle portion 13' into contact with the wearer's leg, and, if desired, band 21 itself may contain electrically-conductive fibers or be otherwise adapted for conveying electrical charges from the leg to conductive stitching 15'.

Boots 10 and 10' are both formed from paper which, by itself, acts as an electrical insulator. Boot 10'' of FIGURE 5 is formed of similar material but the sole portion 22 is impregnated or coated with a suitable material permitting electricity to flow through it. An ink containing a high percentage of carbon black has been found particularly effective although other impregnating or coating materials might be used.

Bands 16'' are stitched in place and the two sections 11'' and 12'' of the boot are secured together by stitching 15''. If desired, stitching 15'' may be electrically conductive, like stitching 15', and bands 16'' may, like bands 16, constitute the free ends of the stitching.

While three different embodiments of the invention are illustrated in the drawings, it is to be understood that certain features of those embodiments may be interchanged to form obvious variations of the illustrated forms. Thus, the boot of FIGURES 1-3 might be provided with the elasticized ankle portion of the second form and, conversely, the boot of FIGURE 4 might be provided with the tie bands of the first or third embodiments. Other similar modifications might be made and it will be understood by those skilled in the art that considerable variation in the details of the illustrated embodiments might be provided without departing from the spirit and scope of the invention.

I claim:

1. An electrically conductive disposable boot comprising a pair of panels formed of readily bendable crepe paper, said panels being stitched together along a single vertical plane to define a boot having foot-space and ankle-receiving portions, first electrically-conductive means extending along the seam between said panels at the bottom of said boot and along said vertical plane for conducting electricity therealong, said electrically-conductive means projecting downwardly from the bottom of said boot for forcefully contacting a floor surface when said boot is worn, and second electrically-conductive means in electrical conducting relation with said first mentioned means and provided by said ankle-receiving portion of said boot for directly contacting a wearer's leg.

2. An electrically conductive disposable boot comprising a pair of panels formed of readily bendable crepe paper, said panels being stitched together along a single vertical plane to define a boot having foot-space and ankle-receiving portions, first electrically-conductive means extending along the seam between said panels at the bottom

of said boot and along said vertical plane for conducting electricity therealong, said electrically-conductive means projecting downwardly from the bottom of said boot for forcefully contacting a floor surface when said boot is worn, and second electrically-conductive means in electrical conducting relation with said first-mentioned means and provided by said ankle-receiving portion of said boot for directly contacting a wearer's leg, said first-mentioned electrically-conductive means comprising a strip of electrically-conductive material secured to the bottom of said boot between said side panels and projecting upwardly and downwardly from the bottom of said boot for contacting both a wearer's shoe and a floor surface.

3. An electrically conductive disposable boot comprising a pair of panels formed of readily bendable crepe paper, said panels being stitched together along a single vertical plane to define a boot having foot-space and ankle-receiving portions, first electrically-conductive means extending along the seam between said panels at the bottom of said boot and along said vertical plane for conducting electricity therealong, said electrically-conductive means projecting downwardly from the bottom of said boot for forcefully contacting a floor surface when said boot is worn, and second electrically-conductive means in electrical conducting relation with said first-mentioned means and provided by said ankle-receiving portion of said boot for directly contacting a wearer's leg, said first-mentioned electrically-conductive means comprising electrically-conductive stitching extending along the bottom of said boot for draining off electrical charges from a wearer's shoe and for conveying such charges to a floor surface.

4. An electrically conductive and disposable shoe cover formed from two panels of paper joined together along the longitudinal vertical midline of said cover to define foot- and ankle-receiving portions therebetween, said shoe cover having a bottom defined by the lower portions of both of said panels and provided along said bottom with an elongated electrically-conductive wiper element, said wiper element extending between said panels along the longitudinal vertical mid plane of said cover, said element also projecting upwardly and downwardly from said bottom of said cover for contacting both a wearer's shoe and a floor surface.

5. An electrically conductive and disposable shoe cover formed from two panels of paper joined together along the longitudinal vertical midline of said cover to define foot- and ankle-receiving portions therebetween, said shoe cover having a bottom defined by the lower portions of both of said panels and provided along said bottom with an elongated electrically-conductive wiper element, said wiper element extending between said panels along the longitudinal vertical mid plane of said cover, said element projecting upwardly and downwardly from said bottom of said cover for contacting both a wearer's shoe and a floor surface, said element also extending upwardly into the ankle-receiving portion of said cover, said ankle-receiving portion being provided with means for drawing the same snugly against a wearer's ankle and for urging the upper portion of said wiper element into electrical contact with a wearer's leg.

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