

July 21, 1931.

H. HIGDEM

1,815,843

INNER SOLE FOR SHOES

Filed Dec. 12, 1929

FIG. 1

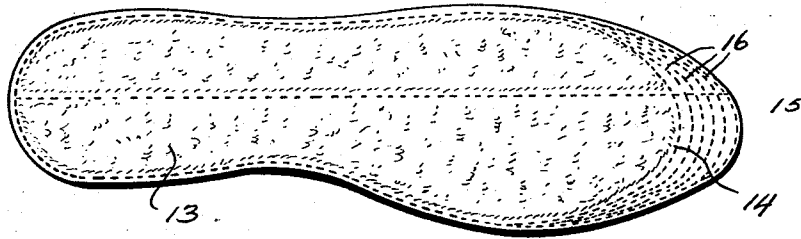


FIG. 2

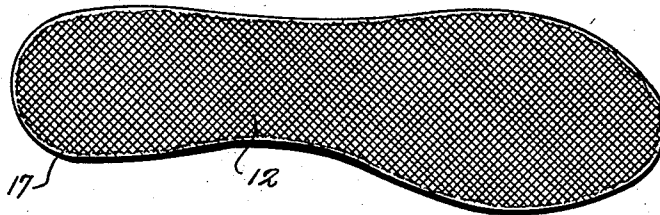
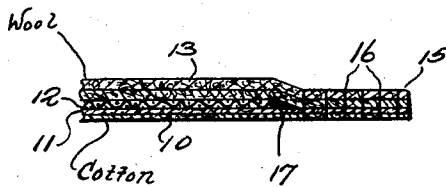


FIG. 3



Inventor

H. Higdem

384 Watson E. Coleman
Attorney

UNITED STATES PATENT OFFICE

HERMAN HIGDEM, OF SEATTLE, WASHINGTON

INNER SOLE FOR SHOES

Application filed December 12, 1929. Serial No. 413,616.

This invention relates to inner soles for shoes, and one of the objects of the invention is to provide an inner sole which is reinforced by wire gauze disposed between layers of fabric, the wire gauze reinforcing member being so cut that the wires are on a bias with relation to the length of the sole, thus acting to prevent the wire gauze from bending in a line at right angles to the longitudinal wires and thus breaking or wrinkling.

A further object is to so construct this reinforcing member that there will be no projecting wires at the margin of the reinforcing member and to provide a reinforcing member of which the body is formed of copper wire while the margin of the reinforcing member is coated with zinc or like metal so as to form an electrical element.

A further object is to provide an inner sole which is extremely flexible and which will exert no friction on the foot and will not, therefore, tend to cause undue heat.

A further object is to provide an inner sole which will give warmth to the foot by having the upper surface of the inner sole formed of wool while the lower surface is formed of cotton or like material and which inner sole may be readily washed at any time.

Another object is to provide an inner sole with an extension which will extend beneath the great toe and have sufficient flexibility to permit the great toe to flex without trouble and to provide means whereby this projecting portion of the inner sole may be trimmed to suit the shape of the foot.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a plan view of an inner sole constructed in accordance with my invention;

Figure 2 is a plan view of the reinforcing element for the sole;

Figure 3 is a fragmentary section longitudinally of the sole and extending through the toe portion thereof.

Referring to these drawings, it will be seen that the inner sole comprises a lowermost layer of cotton fabric 10, such for instance as

ordinary bed ticking, a second layer of cheese cloth or like material 11, a reinforcing layer of wire mesh 12, and an uppermost layer consisting preferably of two thicknesses of wool fabric, these thicknesses being both designated 13. The several layers are stitched together around the margin of the inner sole. The wire layer 12 does not extend the full length of the sole but terminates short thereof on the line 14 so that the layers of textile fabric project beyond this portion to form what might be termed a flap 15. This flap is formed with lines of stitches 16 approximately concentric to the rounded end of the reinforcing layer 12. This permits the flap 15 to be trimmed down to suit any particular shoe or foot.

As will be seen from Figure 2, the wire mesh reinforcement 12 has its transverse wires extending diagonally to the length of the sole and its longitudinal wires also extending diagonally to the length of the sole or at right angles to the transverse wires. Thus the individual wires of the wire mesh are disposed on the bias with relation to the length of the sole. This I regard as a very important feature.

Furthermore, it will be noted that the margin of this reinforcing layer 12 of wire mesh is coated with zinc or solder 17 which constitutes what may be termed a binding for this wire mesh. These two features I regard as important for the following reasons. I have found by actual test that it is impractical to have the wires extending longitudinally of and transversely across the sole as the lengthwise strands of the wire mesh begin to break first in the center of the shank of the sole and then following the wire cross strands across the sole. Furthermore I have found where the cross strands extend at right angles to the length of the sole that these cross strands would creep out through the edge of the sole regardless of how well it was stitched or sewed or whether it was bound with heavy cloth at the edge. After the lengthwise strands of wire have broken across the sole and the transverse wires begin to creep out at the edge, the sole becomes too uncomfortable for wear. I have

found that by cutting the wire on the bias and coating and covering the outer edge with solder, zinc or like material as by dipping sufficiently to entirely embed the outer edge or margin of the wire netting with the solder or zinc, the transverse strands are prevented from creeping out at the edges and furthermore this construction permits me to securely sew the reinforcing layer 12 in and to the covering of the sole. Relatively long use has shown that with such a construction as I have above described, there are no broken strands of wire, nor do the wire strands creep out at the ends.

15 The wire mesh being cut on the bias makes the inner sole extremely flexible. Paper, cork or composition inner soles also tend to unduly heat the foot. By having wool on top of the inner sole, warmth is given to the foot without unduly heating it while the cotton absorbs moisture from the foot. The cold air coming up from the bottom and the heat coming from the foot meet in the air chamber which is formed in the interstices of the wire and any condensed moisture is absorbed by the cotton fabric as are also any impurities coming from the feet and from the soles of the shoes. This inner sole can be washed and kept clean from all impurities and can be scrubbed in such a manner as to remove grease, dirt and filth that may come from working in shops, etc. The more this inner sole is washed, the softer the fabric becomes. Inner soles that cannot be washed become unsanitary.

Furthermore the use of zinc as a binding for the copper wire mesh on coming in contact with the moisture of the feet tends to secure a slight electric current and stop any corrosion of the copper. I furthermore find that this combination of the copper and zinc or copper and equivalent metal as a binder secures a distinct advantage as against dampness, aiding the feet in keeping up their normal temperature, and having an effect upon the circulation. Furthermore, the wire mesh tends to prevent the sole from wrinkling. The flap 15 is used to keep the big toe warm and is also used so that the sole may be trimmed to fit the foot. The wire mesh interposed between the cotton fabric and the wool fabric aids in keeping dampness from penetrating to the feet. If the cloth were placed layer to layer, dampness would at once seep through, but by providing a multiplicity of air chambers formed by the interstices in the copper wire, this is prevented.

I claim:—

1. An inner sole for shoes having an upper and lower layer of textile fabric and an intermediate layer of wire mesh, the wire mesh terminating short of the textile fabric at the toe end thereof whereby the textile fabric forms a flap extending beyond the wire mesh, this flap having a plurality of

rows of stitching extending across it permitting the flap to be trimmed to fit the foot.

2. An inner sole comprising a lower layer of cotton fabric, an upper layer of wool fabric, and an intermediate layer of wire gauze, the margin of the layer of wire gauze being coated with metal to form a metallic binding embedding the ends of the strands of the wire gauze therein.

3. An inner sole for shoes including a lower layer of cotton fabric, an upper layer of wool fabric, and an intermediate layer of wire gauze, the wires of which extend diagonally with relation to the length of the foot, the margins of the wire gauze being coated with metal to form a binding embedding the ends of the strands of wire gauze therein, the margins of the layers of textile fabric and the wire gauze being stitched together.

In testimony whereof I hereunto affix my signature.

HERMAN HIGDEM.

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