

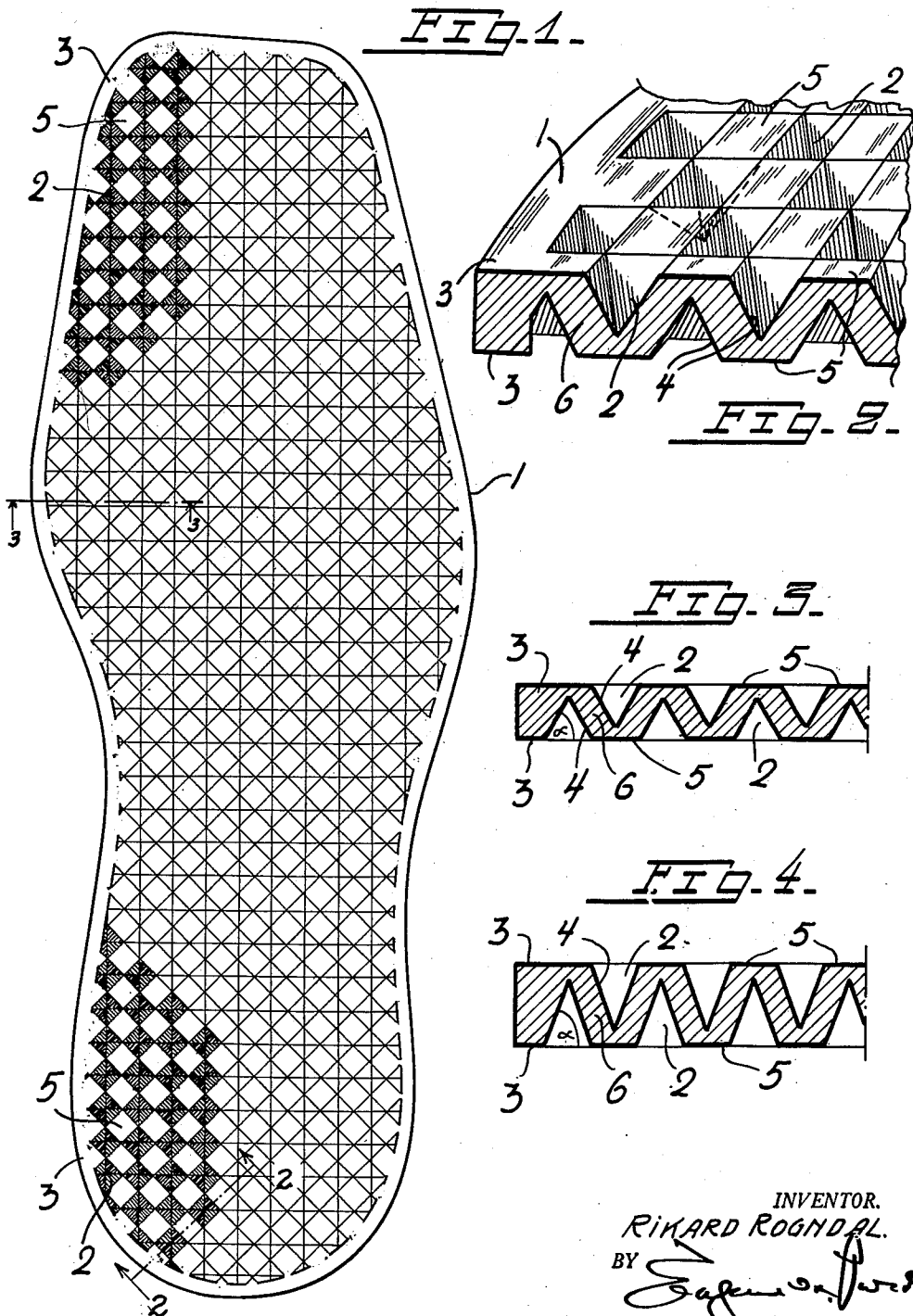
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LIGHTWEIGHT, FLEXIBLE, RESILIENT, AND NONSKID SOLE FOR FOOTWEAR

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LIGHTWEIGHT, FLEXIBLE, RESILIENT, AND
NONSKID SOLE FOR FOOTWEAR

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3 Claims. (Cl. 36—29)

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This invention relates to improvements in and relating to soles for footwear, such as soles made of rubber, rubber substitutes, latex foam or equivalent highly resilient material having depressions extending into the sole from opposite surfaces.

The object of the present invention is to obtain a sole for footwear, which is especially designed to include the following qualities:

It must be elastic and soft to give a feeling of walking on a soft mat even on hard surfaces.

The feet get the natural rest and muscle play both in walking and standing positions.

Lightweight in spite of any thickness and open in construction to avoid moist, clammy feet.

To save tender feet against direct contact with hard surfaces.

Especially designed so it even sticks to wet and slippery surfaces.

Its construction gives unusual comfort for daylong wear in spite of walking or standing on stone or any other hard materials.

With the above object in view, the present invention consists in a sole of the character described which comprises a material having depressions extending into the sole from opposite surfaces, characterised therein that opposite surfaces of said sole are provided with evenly spaced polygonal depressions, a series of same upon one surface of the sole being alternately positioned between the adjacent depressions upon the opposite surface of the sole, the material upon that side of the sole which is directly opposite a depression upon the opposite side of the sole forming a facet.

The present invention also consists in a sole of the character described which comprises a material having depressions extending into the sole from opposite surfaces, characterised therein that opposite surfaces of said sole are provided with evenly spaced polygonal depressions, a series of same upon one surface of the sole being alternately positioned between the adjacent depressions upon the opposite surface of the sole, the material upon that side of the sole which is directly opposite a depression upon the opposite side of the sole forming a facet, the sole being attached to an insole of a footwear, and to a heel, the depressions upon the lower surface of the sole being open while the depressions upon the upper surfaces of the sole form totally enclosed cavities throughout the area covered by the insole and the heel.

One example of the invention will appear from

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the following detailed description, and from the accompanying drawing, wherein:

Figure 1 is a plan view of a sole blank for footwear provided with depressions, the sides of the depressions being indicated by shading on portions of the surface of the blank;

Figure 2 is a fragmentary detail sectional-perspective view taken on the line 2—2 of the blank of Figure 1 but on a larger scale;

Figure 3 is a cross-sectional view through the blank on the line 3—3 of Figure 1; and

Figure 4 is a cross-sectional view similar to that of Figure 3 taken through a sole of greater thickness.

The reference numeral 1 indicates the sole blank in question, preferably manufactured of rubber, rubber substitutes, latex foam or equivalent highly resilient material of a thickness, say about 0.24". Both surfaces of said sole are provided with evenly spaced polygonal depressions 2, which are placed symmetrically over both surfaces leaving a narrow marginal edge 3, say about 0.12" wide, along the circumference of the sole; only a small area at the lower and upper left-hand corners of Figure 1 has been shadowed to show such depressions. The depressions extend inwardly from both surfaces to a depth substantially greater than half the thickness of the blank, as clearly shown in Figure 2, forming evenly spaced cavities so that the opposite surfaces obtain a substantially uniform honey-combed pattern.

Figures 2-4 show that the polygonal depressions in section are alternately positioned between the adjacent depressions upon the opposite surface. They have a diagonal course so that one side of the base of the depressions intersects the longitudinal axis of the sole, say at an angle of about 45°. The depressions may also be parallel to the longitudinal axis of the sole, but it has, however, been established that the best result is obtained when said depressions have a diagonal course as shown upon the drawing.

The depressions have regular pyramidal shape. The faces 4 of same converge to an apex near the opposite surface, say at a distance of about 0.08". The material between said depressions upon both surfaces of the sole, thus form facets 5, which together with the marginal edge 3 constitutes a surface for gluing the sole to an insole (not shown) which is secured to an upper in the usual manner. The marginal edge is thus made wide enough to provide a firm adherence. A heel (not shown) may be glued to the rear part of the sole. The gluing surface formed by the facets

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5 is about 50% of the surface, and in addition thereto the marginal edge 3 constitutes a gluing surface, so that the sole may thus be subject to severe strains without loosening from the insole.

The depressions upon the lower surface are open, while the depressions upon the upper surface of the sole provide entirely closed cavities when attached to an insole. That makes the sole resilient and dry and prevents moist feet. The area covered by the heel will also provide entirely closed cavities thus making the corresponding area soft and pliable.

The pyramidal or similar shape of the depressions provides inclined faces 4, which will make the sole more resilient than if such faces were vertical to the surface.

The inclined partitions 6 between adjacent pyramidal depressions upon opposite surfaces of the sole geometrically correspond in shape, thickness and angles. When pressure is applied to such sole said partitions 6 will yield and give an even elastic resistance distributed over the corresponding area.

The angle α , the thickness of the partitions 6 between adjacent depressions upon opposite surfaces of the sole, the height of such depressions from base to apex, and the thickness of the sole will decide the characteristics and elasticity of the sole. By increasing or decreasing the thickness of the sole, but keeping the dimensions of the base of said depressions constant, the inclination of the partitions 6 (the angle α) and their thickness will be varied, thus considerably changing the characteristics and elasticity of the sole. A sole may thus be made convenient to a wearer of any weight.

The sole in question is light. A thickness of 0.24" corresponds to a solid sole of about 0.12". The sole may be easily exchanged when worn out. It is easy to manufacture, as it may be made by a pressing operation and glued and/or sewn direct to the insole of the footwear.

It will be understood that the invention is not limited to the form of depressions shown upon the drawing and described in the foregoing. Instead of being of regular pyramidal shape, as in the example shown, said depressions may have the shape of an oblique pyramid or a frustum of a pyramid. Other shapes than pyramidal may also be chosen, as for instance any suitable polygonal shape, where the faces of which converge to an apex.

I claim:

1. A sole for footwear comprising a generally

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flat blank of resilient material having generally parallel surfaces provided with a multitude of depressions in its opposite surfaces, said depressions having a depth exceeding half the thickness of the blank and being arranged in parallel rows crosswise of the blank with the depressions of one row laterally offset from the depressions of an immediately adjacent parallel row and the depressions in one surface of the blank located between the companion depressions in a corresponding row of depressions in the opposite surface of the blank, each depression being defined by convergent bounding walls inwardly directed from the surface of the blank and intersecting said surface to form a polygonal outline and the polygonal outlines of the depressions in one row being substantially contiguous at their corners with the outlines of the depressions of an immediately adjacent parallel row, the two opposed sides of corresponding depressions on opposite surfaces of the blank forming an inclined partition therebetween of approximately uniform thickness.

2. A sole for footwear as set forth in claim 1 wherein the surface areas of the blank bounded by the polygonal outlines of the depressions define facets similar in shape to the outlines of the depressions.

3. A sole for footwear as set forth in claim 1 wherein the depressions terminate inwardly of the edge of the blank to provide a continuous strip of material bounding the marginal edge of the blank.

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