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2,229,406

SHOE SOLE

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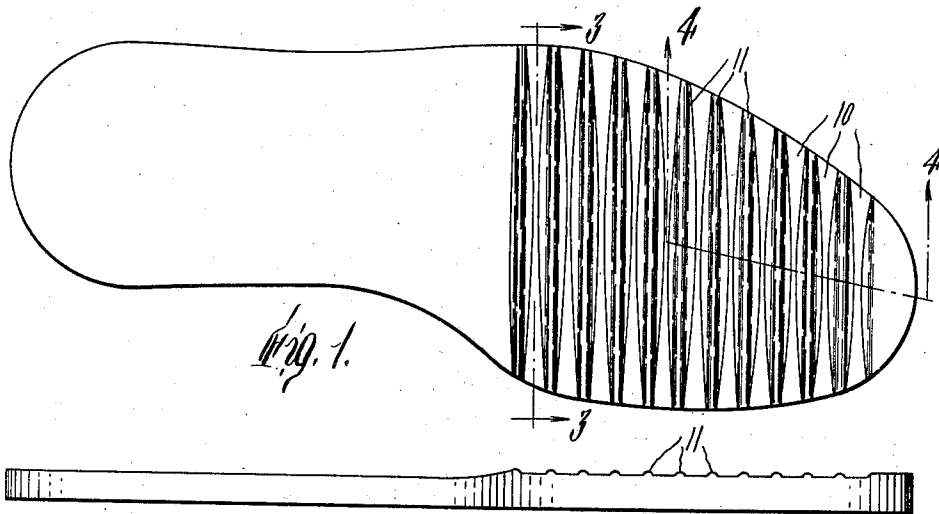


Fig. 3.

Fig. 5.

Fig. 4.

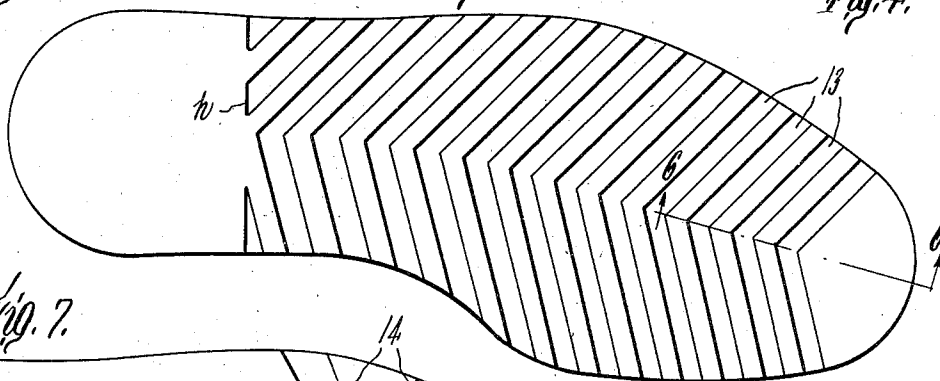


Fig. 7.

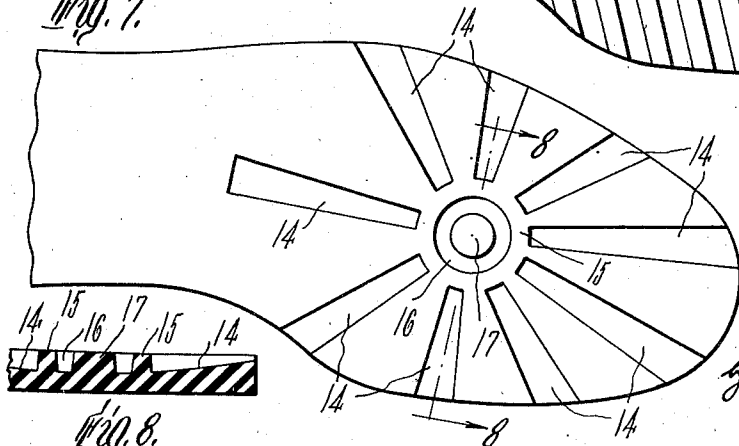


Fig. 6.



Fig. 8.

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SHOE SOLE

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10 Claims. (Cl. 36—59)

This invention relates to a shoe sole and more particularly to a molded rubber sole of the kind used as an outsole in sport shoes.

In accordance with the present invention, the sole presents at the outer or wear surface of at least its forepart a multiplicity of grooves extending from an inner region thereof, say, its center or medial line, to its very marginal or peripheral edge, and having a depth progressively diminishing toward their outer ends. The grooves define therebetween ribs or protrusions that afford desired tractional and anti-slip qualities in the sole to its very edges; and, by virtue of the progressively diminishing depth of the grooves toward the marginal edge of the sole and the correspondingly diminishing size of the protrusions defined therebetween, the sole can be stitched at its marginal edge portion to the base of a shoe practically as easily as the usual flat-faced sole and without any change whatever in the usual sole-stitching machine.

With the foregoing and other features and objects in view, the present invention will now be described in further detail with particular reference to the accompanying drawing, wherein, Fig. 1 shows in plan view a preferred form of sole embodying the present invention.

Fig. 2 represents a side edge view of the sole.

Fig. 3 is a transverse section through the forepart on a line 3—3 of Fig. 1.

Fig. 4 is a longitudinal section through a portion of the forepart on the line 4—4 of Fig. 1.

Fig. 5 depicts in plan view a modification of the present invention.

Fig. 6 is a longitudinal section through a portion of the forepart on the line 6—6 of Fig. 5.

Fig. 7 illustrates in plan view the forepart of a further modification of the present invention.

Fig. 8 is a fragmentary transverse section through the forepart on the line 8—8 of Fig. 7.

The sole depicted in Fig. 1 may be a molded, vulcanized rubber composition, such as is customarily employed for shoe outsoles; or any other suitable or equivalent moldable material may be used therefor. The exposed or wear surface of its forepart is shown as presenting a multiplicity of transverse grooves 10, between which are defined transverse ribs or protrusions 11. Each groove 10 is of progressively diminishing depth from substantially the longitudinal medial line of the sole to its marginal or peripheral edge, as appears best in Fig. 3. The groove depth at the longitudinal medial line is preferably at least $\frac{1}{8}$ "', whereas the groove depth at the marginal edge is preferably no

greater than $\frac{1}{8}$ ". These limiting measurements for the groove depth have been found to comport with the best results in actual practice, including the desired stitchability of the sole at its marginal portion as well as desired tractional or anti-slip quality in the sole. Typically, the grooved depth at the longitudinal medial line is substantially $\frac{1}{4}$ " and that at the marginal edge $\frac{1}{8}$ ". It is also preferable that each groove be flared or of progressively increasing width toward its outer end so that the ribs defined therebetween will be of tapering width toward their outer ends, as illustrated in Fig. 1. The side walls 11a of adjacent ribs are shown in Fig. 4 as being inclined toward one another, particularly as such inclination makes for a rib structure of the desired integrity or strength at its base.

The form of sole depicted in Fig. 5 differs from that of Fig. 1 essentially only in that the grooves therein assume a herringbone configuration relative to the longitudinal medial line of the sole as a center. The grooves 13, which may have the trapezoidal cross-section shown in Fig. 6, are of progressively diminishing depth from their inner ends (i. e., starting with the longitudinal medial line of the sole) to their outer ends (i. e., terminating with the marginal or peripheral edge of the sole). If desired, the grooves 13 may occur in the sole from substantially its toe portion to its heel line h.

In still another form of the present invention, the grooves in the sole forepart may radiate from an inner or substantially central region to the edge. Thus, as illustrated in Fig. 7, a plurality of grooves or recesses 14 may radiate from a central annular rib 15 in the forepart to the marginal edge of the forepart, each such groove or recess being of progressively decreasing depth but of progressively increasing width toward its outer end. The inner wall of the annular rib 15 is shown as being defined by an annular groove 16 surrounding a central boss or button 17.

The grooves or recesses of progressively diminishing depth toward their outer ends may be created in the sole of the present invention by providing intervening ribs of progressively decreasing height toward their outer ends. In other words, the sole of the present invention may be provided with grooves that extend substantially to the same depth inwardly of the body of the sole and with intervening ribs or protrusions that extend to progressively varying height outwardly of the body of the sole, the

maximum height of such ribs or protrusions being substantially at the center or at the longitudinal medial line of the sole.

Since the principles of the present invention may be utilized in further modifications or variants of the particular sole structures hereinbefore described, it is to be understood that the definition of the instant invention as given in the appended claims should be construed as broadly as the prior art permits.

I claim:

1. A shoe sole presenting at the wear surface of at least its forepart a multiplicity of grooves extending from an inner region thereof to its very marginal edge, said grooves being of progressively diminishing depth toward their outer ends and having a depth of at least $\frac{1}{8}$ " at their region of maximum depth.

2. A shoe sole presenting at the wear surface of at least its forepart a multiplicity of grooves extending from an inner region thereof to its very marginal edge, said grooves being of progressively diminishing depth toward their outer ends and having a depth no greater than $\frac{1}{8}$ " at their region of minimum depth.

3. A shoe sole presenting at the wear surface of at least its forepart a multiplicity of grooves extending from an inner region thereof to its very marginal edge, said grooves being of progressively diminishing depth toward their outer ends and having a depth at their region of maximum depth of at least $\frac{1}{8}$ " and a depth at their region of minimum depth no greater than $\frac{1}{8}$ ".

4. A shoe sole presenting at the wear surface of at least its forepart a multiplicity of grooves extending from an inner region thereof to its very marginal edge, said grooves being of progressively diminishing depth toward their outer ends and having at their region of maximum depth a depth of substantially $\frac{1}{4}$ " and at their region of minimum depth a depth of substantially $\frac{1}{8}$ ".

5. A shoe sole presenting at the wear surface of at least its forepart a multiplicity of grooves extending transversely thereof to its very marginal edge and defining therebetween a multiplicity of ribs, said grooves being of progressively diminishing depth from substantially the longitudinal medial line of the sole toward their outer ends

and the side walls of adjacent ribs being inclined toward one another.

6. A shoe sole presenting at the wear surface of at least its forepart a multiplicity of grooves extending transversely thereof to its very marginal edge and defining therebetween a multiplicity of ribs, said grooves being of progressively diminishing depth but of progressively increasing width toward their outer ends from substantially the longitudinal medial line of the sole.

7. A shoe sole presenting at the wear surface of at least its forepart a multiplicity of grooves extending transversely thereof to its very marginal edge and defining therebetween a multiplicity of ribs, said grooves being of progressively diminishing depth but of progressively increasing width toward their outer ends from substantially the longitudinal medial line of the sole and the side walls of adjacent ribs being inclined toward one another.

8. A shoe sole presenting at the wear surface of at least its forepart a multiplicity of grooves extending transversely thereof to its very marginal edge and defining therebetween a multiplicity of ribs, said grooves being of progressively diminishing depth from substantially the longitudinal medial line of the sole toward their outer ends and having a depth of at least $\frac{1}{8}$ " at substantially the longitudinal medial line.

9. A shoe sole presenting at the wear surface of at least its forepart a multiplicity of grooves extending transversely thereof to its very marginal edge and defining therebetween a multiplicity of ribs, said grooves being of progressively diminishing depth from substantially the longitudinal medial line of the sole toward their outer ends and having a depth no greater than $\frac{1}{8}$ " at their region of minimum depth.

10. A shoe sole presenting at the wear surface of at least its forepart a multiplicity of grooves extending transversely thereof to its very marginal edge and defining therebetween a multiplicity of ribs, said grooves being of progressively diminishing depth from substantially the longitudinal medial line of the sole toward their outer ends and having a depth of at least $\frac{1}{8}$ " at substantially the longitudinal medial line and a depth no greater than $\frac{1}{8}$ " at their region of minimum depth.

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