Oct. 31, 1961 G. H. BINGHAM, JR 3,006,085

RIBBED OUTERSOLE OF MOLDABLE MATERIAL

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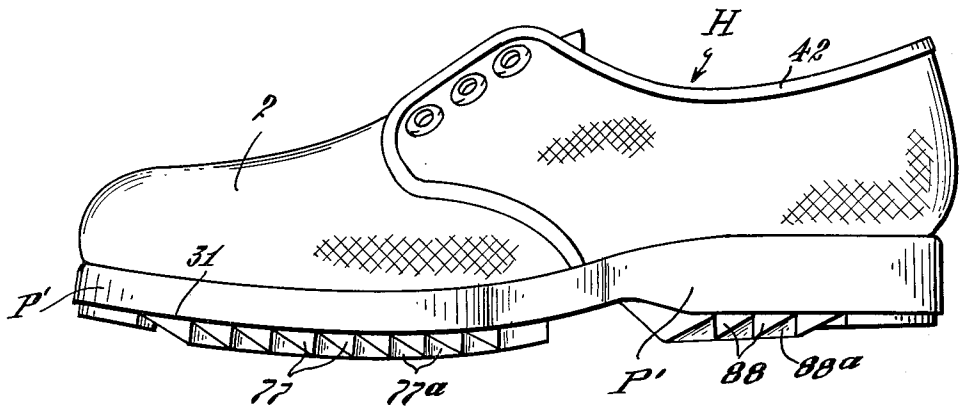


Fig. 1

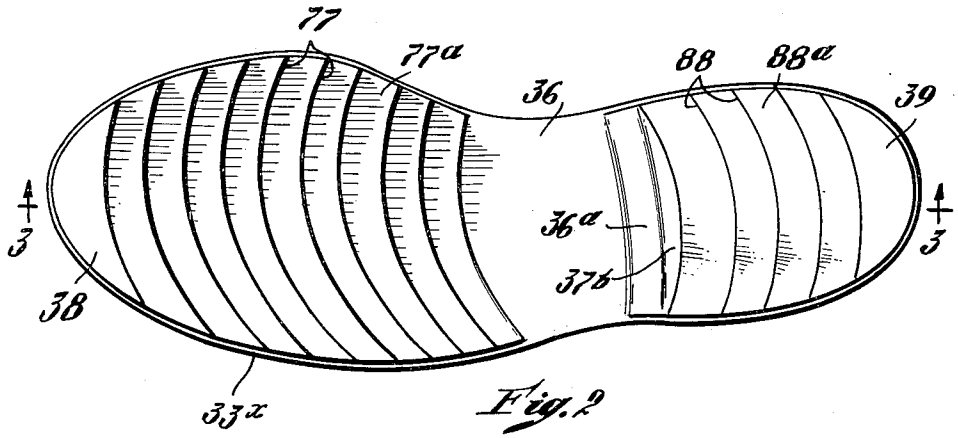


Fig. 2

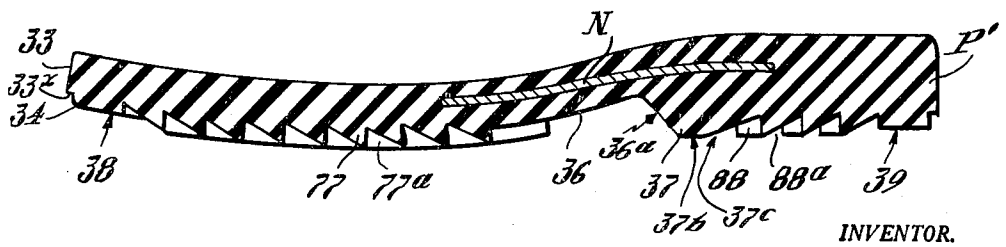


Fig. 3

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RIBBED OUTERSOLE OF MOLDABLE MATERIAL

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1 Claim. (Cl. 36—59)

This invention pertains to footwear, more particularly to an outersole of rubber compound or other moldable resilient material, and relates more particularly to an outersole whose tread surface is provided with transversely extending ribs and intervening channels, each rib and channel being of approximately triangular shape (in a vertical plane extending lengthwise of the sole) with the apex of the triangle directed downwardly.

It has heretofore been proposed to provide a rubber or similarly resilient outersole with transversely extending ribs, in particular for the purpose of increasing the resiliency of the sole as compared with an unribbed sole of the same material, and to make such ribs of sawtooth shape, in section, with the forward and rear faces of each rib sloping downwardly and rearwardly, but at different angles to the vertical, respectively. While such an arrangement makes the sole very soft and resiliently yieldable, forces are developed in the use of a shoe equipped with such a sole such as to suggest to the wearer that he is being propelled forwardly, which to some persons is not agreeable. Moreover, when the front and rear faces of the ribs both slope, there is a strong tendency of mud or other dirt to embed in the angle where said faces intersect.

One of the objects of the present invention is to provide a rubber outersole of high resiliency, but wherein the ribs are so shaped and arranged that the pressure of the foot in walking does not create an unbalanced force of appreciable amount either forwardly or rearwardly.

A further object is to provide an outersole whose tread surface comprises transversely extending ribs and channels, the ribs being triangular in vertical section, but with the ribs so arranged that any tendency of certain of the ribs to create a forwardly acting force in response to the pressure of the foot in walking is substantially neutralized by the action of other ribs.

In accordance with customary practice in making such outersoles, particularly when the outersole is molded as an incident to the attachment of the outersole to the bottom of a lasted shoe, the exposed end faces of the ribs are sometimes irregular and the ends of the channels are not uniform in shape. A further object of the invention is to provide an outersole of the above type wherein the ends of the several ribs are smoothly finished and the ends of the channels are of uniform shape and dimensions.

A further object is to provide an outersole having two series of transversely extending ribs, one series being in the forepart portion and the other at the heel portion, wherein the ribs of the series at the heel portion are so shaped as to develop a force tending to neutralize any forwardly acting force created by the ribs of the forward series in response to the pressure of the foot.

A further object is to provide an outersole having transversely extending ribs which are so shaped as to minimize the tendency of the sole to pick up mud.

A further object is to provide an outersole having transversely extending ribs and channels wherein the ribs are so shaped as to provide an increased wear surface as compared with ribs as conventionally arranged.

Other and further objects and advantages of the invention will be pointed out in the following more detailed description and by reference to the accompanying drawing, wherein

FIG. 1 is a side elevation of a shoe having a ribbed sole embodying the present invention;

FIG. 2 is a bottom view of the outersole shown in FIG. 1; and

FIG. 3 is a vertical section substantially on the line 3—3 of FIG. 2.

The improved outersole of the present invention is shown in FIG. 1 as embodied in a shoe H whose upper **2** has been bonded, for example, by vulcanization to the outersole P^1. The peripheral edge of the outersole as here illustrated (FIG. 3) has distinct upper and lower portions **33** and **34** defined by a substantially horizontal shoulder **33***x* extending along the periphery of the outersole at the forepart and heel portion.

At its forepart portion the lower surface of the sole has transversely extending ribs **77** with intervening channels **77***a*, while at the heel portion the lower surface has transversely extending ribs **88** with interventing channels **88***a*. The ribs **77** at the forepart portion have substantially vertical rear faces, while the ribs **88** at the heel end of the outersole have substantially vertical forward faces. As illustrated in FIG. 2, the rear faces of the ribs at the forepart portion are concavely curved as viewed from the rear, while the forward faces of the ribs at the heel portion of the sole are concavely curved as viewed from the front. Because of the relative shapes of the ribs **77** and **88**, any tendency of one set of ribs to develop a forward or rearwardly component of force while walking is substantially neutralized by the action of the other set. Moreover, by making one face of each rib substantially vertical, the channel between adjacent ribs shows far less tendency to fill up with mud or other foreign matter than though both faces of the ribs were sloped, as has previously been customary. As shown, the outersole has a substantially flat or unribbed area **38** at its toe end portion, and a similar flat unribbed area **39** at its heel end, said areas being adapted to receive metallic or other wear plates (not shown).

Intermediate the ribbed forward and rear portions, the lower surface of the sole has an unribbed area **36** (FIG. 3) which slopes upwardly and rearwardly from the vertical rear face of the rearmost rib **77**, and which intersects a forwardly and upwardly sloping surface **36***a* forming the front face of a rib **37** having a substantially horizontal bottom face **37***b* (FIG. 2) and an upwardly and rearwardly sloping rear surface **37***c* which intersects the vertical face of the foremost rib **88**. The rib **37** is thus of truncated, triangular shape in vertical section, being wider at its junction with the base material of the sole than are the ribs **77** or **78**, and having its lower face **37***b* located substantially at the heel breast line. The provision of this thick rib **37** insures a body of sole material of a vertical depth such as to afford a secure anchorage for an embedded shank stiffener N, for example, of steel (FIG. 3), this shank stiffener extending forwardly and into the forepart portion of the sole.

It may be noted that the horizontal shoulder **33***x* (FIG. 3) is located approximately at the level of the upper apexes of the recesses between the ribs, leaving the ends of the channels completely open, while providing a neat and finished appearance to the peripheral edge of the sole.

The unribbed portion **36** of the molded sole desirably slopes upwardly and rearwardly as illustrated in FIG. 3.

While, as above suggested, the outersole of the present invention may be bonded to a lasted upper by the employment of cement and vulcanization, it is contemplated that the outersole may be formed from a mass of a suitable moldable compound concomitantly with its bonding to the lasted upper, and that in the latter case, the outersole will be shaped by the employment of suitable molds (not here shown), while the bottom of the lasted shoe is

pressed downwardly into adhering contact with the upper surface of the mass of moldable compound.

While one desirable embodiment of the invention has herein been illustrated and described by way of example, it will be understood that the invention is broadly inclusive of any and all modifications falling within the scope of the appended claim.

I claim:

An outersole for an article of footwear, said outersole comprising a body portion extending from the toe to the heel and whose upper surface is designed for contact with the bottom of a lasted shoe, the tread surface of the sole having two series of transversely extending ribs integral with the body portion with intervening, transversely extending channels, one series being at the forepart portion and the other series being at the heel portion, each rib having one vertical face and one inclined face, the inclined faces of the ribs at the forepart portion sloping downwardly and rearwardly and those at the heel portion sloping downwardly and forwardly, the rear faces of the ribs at the forepart portion being concavely curved as viewed from the rear and the forward faces of the ribs at the heel portion being concavely curved as viewed from the front, a metallic shank stiffener embedded in the substance of the outersole at its shank portion and

extending longitudinally of the shank portion, the two series of ribs being spaced apart at the shank portion, and a single rib intervening between said two series, said single rib being of truncated triangular section having its narrow lower face at the heel breast line and, at its junction with the body of the sole, being wider than any of the ribs of the respective series, said wider rib providing a body of sole material of such thickness as to afford secure anchorage for the rear end portion of the embedded shank stiffener, the peripheral edge of the sole proper comprising an uninterrupted, substantially horizontal shoulder substantially flush with the apices of the channels so that the end faces of the ribs are set back from the upper vertical portion of the peripheral edge of the sole and may be smooth and free from tags of the sole material.

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