Nov. 28, 1944. E. E. ROLLMAN ET AL 2,363,995

SHOE SOLE

Filed June 24, 1943

Fig. 1.

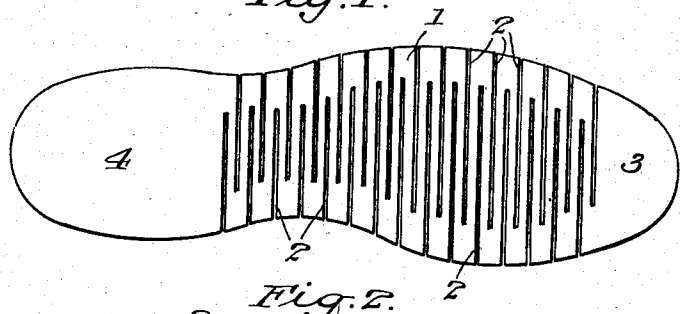


Fig. 2.

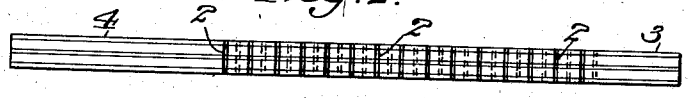


Fig. 3.

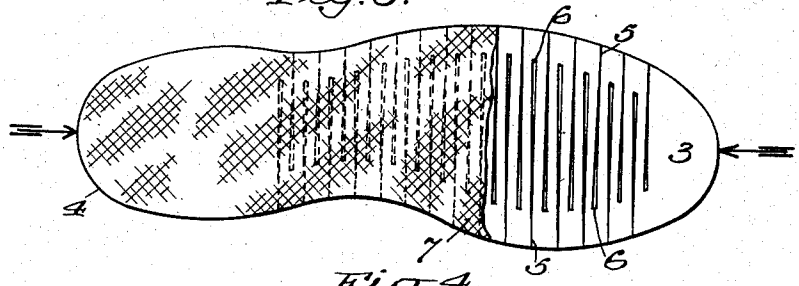


Fig. 4.

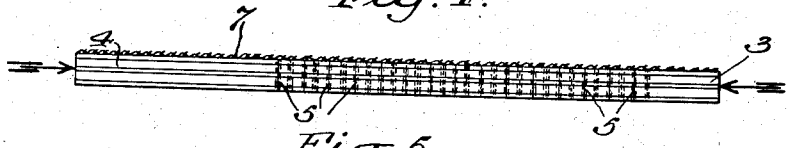


Fig. 5.

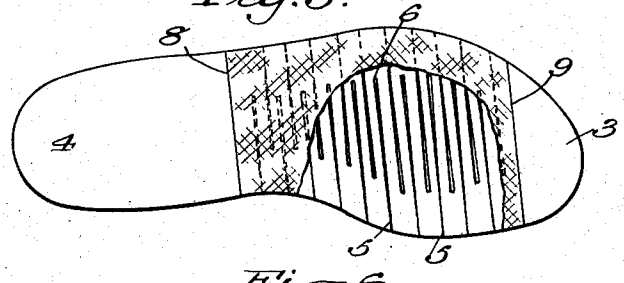
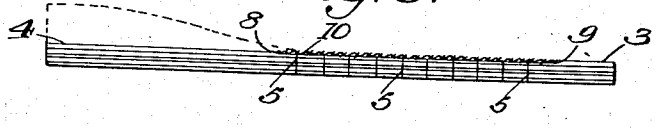


Fig. 6.



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SHOE SOLE

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Application June 24, 1943, Serial No. 492,054

6 Claims. (Cl. 36—30)

This invention relates to a shoe sole and method of making same, having particular reference to the construction of shoe soles of wood, whether plain or laminated, or of other materials having similar normal characteristics of rigidity and durability.

An object of the invention is to provide a shoe sole in which a normally rigid material is so formed as to have adequate flexibility without loss of durability.

A further object is to provide such a shoe sole in which flexibility in more than one direction is so modified during the assembly of the parts that the completed sole will flex only upwardly.

A further object is to provide certain improvements in the form, construction and arrangements of the several parts, and in the steps followed, whereby the above and other objects may effectively be attained.

A practical embodiment of the invention is shown in the accompanying drawing in which

Fig. 1 represents a plan view of a shoe sole blank after it has been slotted transversely,

Fig. 2 represents a side elevation of the blank shown in Fig. 1,

Fig. 3 represents a plan view of the blank as compressed longitudinally preparatory to mounting on a flexible liner,

Fig. 4 represents a side elevation of the blank shown in Fig. 3 mounted on a flexible liner,

Fig. 5 represents a top plan view of a modified form of sole, and

Fig. 6 represents a side elevation of the sole shown in Fig. 5.

Referring to the drawing, a blank 1 of wood or the like is cut to the desired outline, as shown in Fig. 1, the length of the blank being slightly greater than the desired length of the finished sole. The blank is then slotted, as by saw cuts, to provide a series of slots 2 extending from each side of the sole toward, but not to, the opposite side and arranged alternately, a suitable number of such slots being eight to sixteen on each side depending on the dimensions of the sole. The toe portion 3 and the heel portion 4, in which flexibility is not needed, are left in their original rigid condition. Throughout the slotted area the sole blank is quite flexible in both vertical directions and somewhat flexible laterally. Since the only flexing which is desirable is that in an upward direction, the blank formed as just described is next compressed longitudinally (as shown in Fig. 3) so that the outer ends 5 of each slot are closed, the slots thus assuming a triangular or tapering form, widest at their inner ends 6 and narrowing toward their closed outer ends 5. With the blank held in compressed condition a flexible liner 7 of heavy canvas or the like is glued or cemented to the upper surface of the sole (as shown in Fig. 4) and the sole is then ready to receive any desired upper parts according to the type of shoe being constructed.

After the compressed sole has been secured to the liner 7 it can no longer bend either downwardly or laterally because the slots are closed at their outer ends 5, but these slots are free to open from the bottom in order to permit upward flexing of the sole as in walking.

The modified construction shown in Figs. 5 and 6 is particularly suitable for use when it is intended to apply a heel wedge or filler from the heel to the instep of the shoe. In this form the upper surface of the sole is recessed between the points 8 and 9 and a liner 10 is fitted in this recess with its upper surface substantially flush with the adjacent toe and heel areas of the sole.

In the preferred use of this invention the sole is intended to lie substantially flat and to constitute the entire bottom surface of the shoe. When embodied in a man's shoe it may be desirable to add some standard form of low heel which will not materially change the flat position of the sole, but when used in a woman's shoe it is preferable to provide all the elevation of the heel by means of a wedge or filler secured to the top of the sole, as referred to in connection with Figs. 5 and 6.

Soles constructed as described have no objectionable tendency to pick up stones or dirt, since the slots are very narrow and only open a slight distance when the sole is flexed. In this connection it is also important to note the tapering form of the slots when at rest, and the further fact that the inner end 6 of each slot remains substantially constant in width while other parts of the slot open progressively more and more (when flexed) as the outer edge is approached, due to the torsion of each narrow strip of material between two adjacent slots. The danger of the sole breaking when flexed is minimized by the distribution of the strain along the total length of all the strips, which thus constitute, in effect, a long torsion spring folded into compact zigzag form.

A preferred material for making the soles is laminated wood composed of three to five layers,

but plain wood or a solidified plastic may also be used with the same mechanical results.

It will be understood that various changes may be made in the construction, form and arrangement of the several parts without departing from the spirit and scope of our invention and hence we do not intend to be limited to the particular embodiment herein shown and described. but

What we claim is:

1. A shoe sole comprising a body of normally rigid material provided throughout its middle portion with a plurality of slots extending alternately from each side edge of the sole toward the opposite side edge, the slots being closed at their outer ends and open at their inner ends.

2. A shoe sole according to claim 1 in which a liner of flexible fibrous material is secured to the upper surface of the slotted body.

3. A shoe sole according to claim 1 in which the upper surface of the slotted body is recessed throughout the area of the slotted portion and in which a liner of flexible fibrous material is secured to said upper surface within said recessed area.

4. The method of making a shoe sole which comprises, providing a body of normally rigid material in substantially the shape of the sole, cutting a plurality of slots through said body at its middle portion, said slots extending alternately from each side edge of the sole toward the opposite edge, compressing the slotted body longitudinally to close the outer ends of the slots, and securing the body in its compressed condition.

5. The method of making a shoe sole according to claim 4 which includes securing the body in its compressed condition to a liner of flexible fibrous material.

6. The method of making a shoe sole according to claim 4 which includes forming a recess throughout the area of the slotted portion and securing the body in its compressed condition to a liner of flexible fibrous material positioned in said recess.

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