Sept. 2, 1947. E. A. CREPEAU 2,426,671

MIDSOLE FOR PLATFORM SHOES

Original Filed Oct. 1, 1942 2 Sheets-Sheet 1

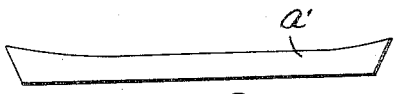


Fig. 2

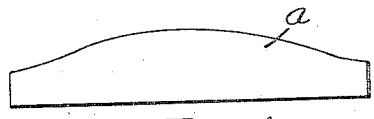


Fig. 1

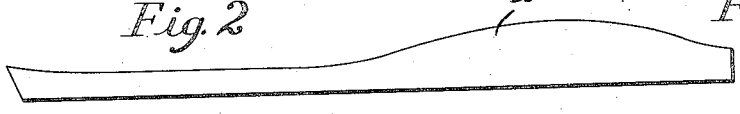


Fig. 3

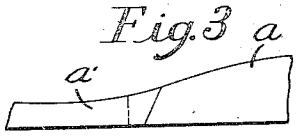


Fig. 4

Fig. 5

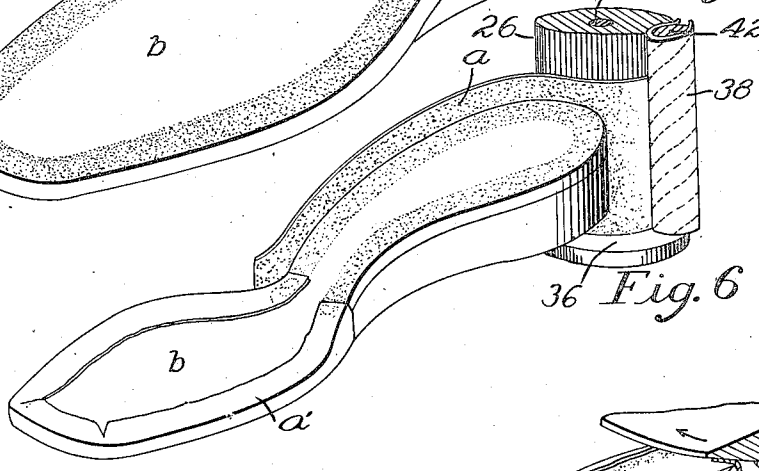


Fig. 6

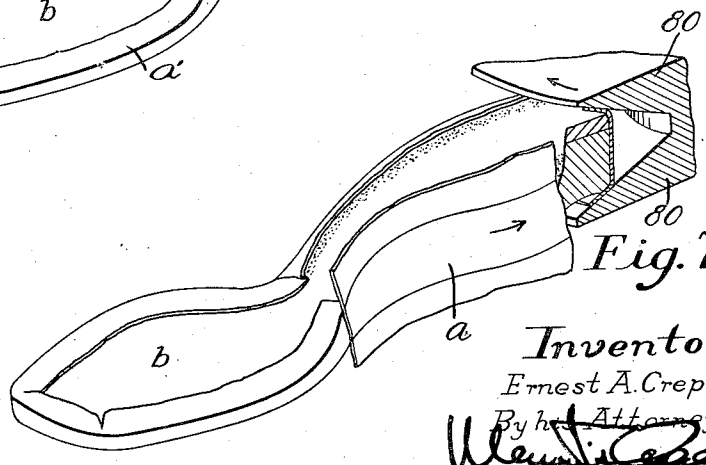


Fig. 7

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Sept. 2, 1947. E. A. CREPEAU 2,426,671

MIDSOLE FOR PLATFORM SHOES

Original Filed Oct. 1, 1942 2 Sheets-Sheet 2

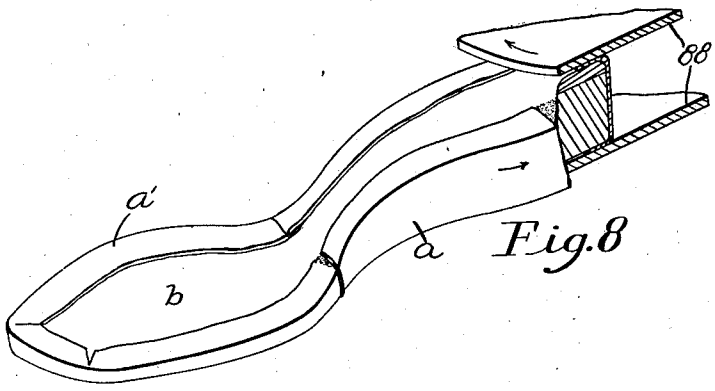


Fig.8

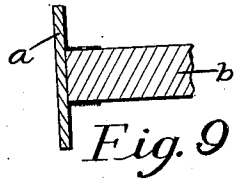


Fig. 9

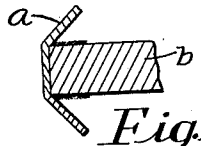


Fig.10

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2,426,671

MIDSOLE FOR PLATFORM SHOES

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Original application October 1, 1942, Serial No. 460,384. Divided and this application March 23, 1945, Serial No. 584,384

1 Claim. (Cl. 36—30)

1

This invention relates to shoe soles and is herein illustrated as embodied in a midsole of a platform shoe. A method of and a machine for making such an insole are disclosed in United States Letters Patent No. 2,397,245, granted March 26, 1946, upon an application which was filed in my name and of which the present application is a division.

Midsoles, or platform soles, used to a large extent in play shoes and slippers, may consist of a resilient pad of uniform thickness from heel to toe or of a pad which is thicker at the heel portion than at the toe portion. The peripheral portions of these pads are usually covered with strips of leather or cloth to hide the raw edge faces and provide a finished, decorative appearance. The binding material comes in strip form and is wide enough to overlap the top and bottom faces of the pad and to be secured to these faces by stitching, stapling or adhesion. A single strip may be applied to the entire peripheral edge or there may be a piece surrounding the heel end of the pad and another piece surrounding the toe end.

It has hitherto been customary to attach the binding strip to the peripheral edge face and to the marginal surface portions adjacent thereto with the entire width of the binding strip adhesively secured to the pad. Even when the binding strip was finally secured by stitching or stapling which extended through the marginal portion of the pad from top to bottom the binding strip was, nevertheless, adhesively secured over its entire width. When the pad, which is composed of resilient material, is compressed under the heavy pressure of the sole pressing machine, the binding strip, which has been adhesively attached to the peripheral edge of the pad, is caused to wrinkle. Even when the pressure is released and the pad expands to its original thickness the binding nevertheless remains wrinkled because of the fact that the adhesive-coated surfaces of the binding strip and the pad do not move freely with respect to one another. The same effect appears to a less extent when the sole is subjected to the intermittent compression of daily use.

An object of the present invention is to provide an improved midsole having its edge faces covered by a binding strip which is taut and unwrinkled. In accordance with a feature of the invention, the binding strip is adhesively secured to the marginal portions of the top and bottom faces only of the midsole. The binding strip is not attached to the edge face of the midsole and is tightly stretched over the edge face. The midsole may be composed of resilient material and the binding strip may be applied while the marginal portions of the midsole are under compression so that when the pressure is released the binding strip will be stretched across the edge face of the midsole. The binding strip may be applied in such a manner as to cause the stretch lengthwise to be less than the stretch widthwise.

2

These and other features of the invention, including certain details of construction and combinations of parts, will be described in connection with an illustrative midsole and pointed out in the appended claim.

Referring now to the accompanying drawings,

Fig. 1 shows the general shape of a piece of precoated binding strip adapted to be applied to the heel portion of a midsole pad;

Fig. 2 shows a piece of precoated binding strip adapted to be applied to the toe portion of the pad;

Fig. 3 shows a single piece of precoated binding strip adapted to be applied to the entire periphery of the pad;

Fig. 4 shows the pieces of binding strip illustrated in Figs. 1 and 2 joined by adhesive to provide a single piece adapted to be applied to the entire periphery of the pad;

Fig. 5 discloses a wedge-shaped resilient midsole pad having adhesive applied to its top and bottom marginal portions;

Fig. 6 shows the application of the binding strip to the heel portion of the pad with the marginal portions of the binding strip extending beyond the top and bottom faces of the pad;

Fig. 7 shows the partial bending or breaking down of the projecting marginal portions of the binding and the compressing of the margin of the midsole;

Fig. 8 shows the projecting marginal portions of the binding wiped inwardly and pressed into engagement with the pad while the margin of the midsole is being further compressed;

Fig. 9 is an enlarged section of a marginal portion of the pad showing the adhesive extending to the corners of the pad and the binding strip adhering to the corners; and

Fig. 10 is an enlarged section showing the partial breaking down and adherence of the binding strip to the top and bottom faces of the pad close to the corners.

The midsole illustrated herein comprises a midsole pad or platform having a binding strip extending around its peripheral edge and overlapping the marginal portions of its top and bottom faces. Fig. 1 shows a piece of binding strip *a* adapted to be applied to the heel end of a

midsole pad *b*, as shown in Figs. 6, 7 and 8. Fig. 2 shows a piece of binding strip *a'* adapted to be applied to the toe portion of the midsole *b*. When the binding material can be obtained in sufficient length, a single strip *a''*, as shown in Fig. 3, may be used to cover the entire periphery of the pad *b*. However, when the binding material consists of leather, the difficulty of obtaining material of sufficient length has led to the practice of employing separate pieces such as *a* and *a'* instead of a single piece *a''*. The pieces *a* and *a'* may, if desired, be adhesively joined by a lap joint (Fig. 4) to enable them to be applied as a single strip.

In preparing the binding strip, advantage should be taken of the fact that leather and cloth have greater stretch in one direction than in the other, and the binding strip should be prepared in such a manner that the stretch per inch widthwise of the strip is less than the stretch per inch lengthwise in order to minimize the amount of stretch between the top and bottom faces of the midsole. In leather the stretch is greater along lines substantially at right angles to the backbone of the hide, that is, from side to side, and consequently if the strips are so cut that their longer dimensions are at right angles to the backbone of the hide, a minimum of stretch will be presented widthwise of the strip. In cloth or textile material the stretch is greatest weftwise and consequently if the strips are so cut that their long dimensions extend weftwise, the minimum stretch will be widthwise of the strips.

The minimum stretch of the binding strip, being widthwise, will enable the strip to resist the tendency of the compressed marginal portion of the midsole to expand, while the maximum stretch, being lengthwise, will enable the marginal portions of the strip to lie flat upon the upper and lower faces of the midsole at the curved portions thereof.

The binding strip has its inner surface coated with adhesive to enable that surface to be applied to the midsole pad. While the entire inner surface of the binding strip is covered with adhesive, the nature of the adhesive is such that it will adhere only to a surface treated with a like coating of adhesive.

The midsole pad or platform *b* to which the binding is to be applied is composed of a resilient material such as felted fibers or a combination of fibers and cork. It may be of uniform thickness from heel to toe or it may have a raised portion *c* (Fig. 5) at the heel end which in many types of shoe tapers gradually to merge with the thin forepart. In preparing the midsole for the attachment of the binding strip, adhesive is applied to the marginal portions of the top and bottom faces of the midsole. The adhesive is carried all the way to the corners of the midsole but is not applied to the edge faces. It is to be observed that the word "corners" as employed herein means the lines of intersection between the peripheral edge face and the top and bottom faces of the midsole pad.

The binding strip may, if desired, be applied to the midsole pad by the use of the machine disclosed in Letters Patent No. 2,397,245 above mentioned. The midsole pad is first presented to that portion of the machine which comprises a roll **26** (Fig. 6) freely rotatable about a spindle **28**, the operator holding the midsole pad *b* with its lower face supported by a surface **36** in such a way as to cause the edge face of the pad to be

overlapped by the binding strip *a* which is fed between a belt **38** and the roll **26**. The belt **38** is supported and guided by a roll **42**. The result of this operation, as shown in Fig. 9, is to cause the binding strip *a* to adhere only to the corners of the edge face of the pad *b* because the omission of adhesive upon the edge face of the pad will prevent the binding strip from adhering even though the whole face of the binding strip itself be coated with adhesive. The midsole is next presented, as shown in Fig. 7, to that portion of the machine comprising a grooved disk **80**, which breaks down and partially folds over the projecting marginal portions of the binding strip, thereby stretching the binding strip tautly over the peripheral edge face and subjecting the midsole to such pressure as to compress it to some extent and also to cause the binding strip to adhere to the marginal portions of the top and bottom faces close to the corners of the midsole pad, as shown in Fig. 10. The midsole is finally, as shown in Fig. 8, presented to that portion of the machine which comprises disks **88**. The upper disk **88** is spring pressed downwardly toward the lower disk with a pressure sufficient to cause further compression in the marginal portion of the midsole pad. As the midsole is fed by the operator between the disks **88**, the binding strip is progressively wiped and pressed into engagement with the marginal portion of the midsole and adhesively secured thereto while the midsole is under compression. It is to be observed that the rotation of the disks is such that as the midsole is drawn between them there is a component of force exerted on the edge portions of the work which tends to wipe the marginal portions of the binding inwardly and another component which acts longitudinally of the midsole and in the same direction as the midsole is moving to iron the pressed-down marginal portions. The component of force exerted in the direction of movement of the midsole tends to shorten the inner edges of the marginal portions of the binding strip and thus to draw the binding strip close about the curved portion of the midsole and to eliminate wrinkling of the overlapping portion of the binding.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

An article of manufacture comprising a midsole having a binding strip extending around its peripheral edge and overlapping the marginal portions of its top and bottom faces and being adhesively attached only to the marginal portions of the top and bottom faces in a manner to hold said peripheral edge under compression, said binding strip being unattached to said peripheral edge and being composed of a material which is inherently more stretchable lengthwise of the strip than widthwise.

ERNEST A. CREPEAU.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,321,713	Turner	June 15, 1943
2,078,346	Schleich	Apr. 27, 1937
2,175,050	Bessett	Oct. 3, 1939