Jan. 30, 1945. F. L. AYERS 2,368,439

INNERSOLE

Filed Dec. 29, 1941 2 Sheets-Sheet 1

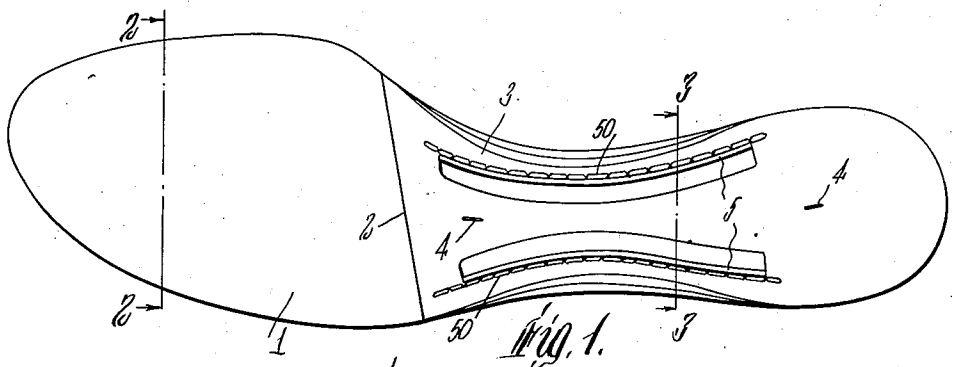


Fig. 1.



Fig. 2.

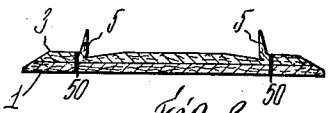


Fig. 3.

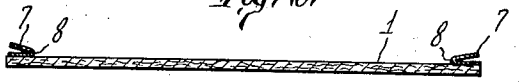


Fig. 6.

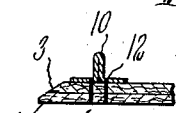


Fig. 4.

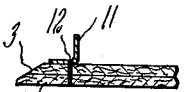


Fig. 5.

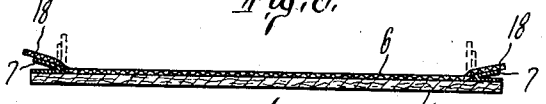


Fig. 7.

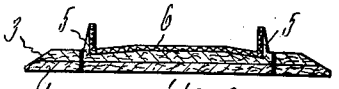


Fig. 8.

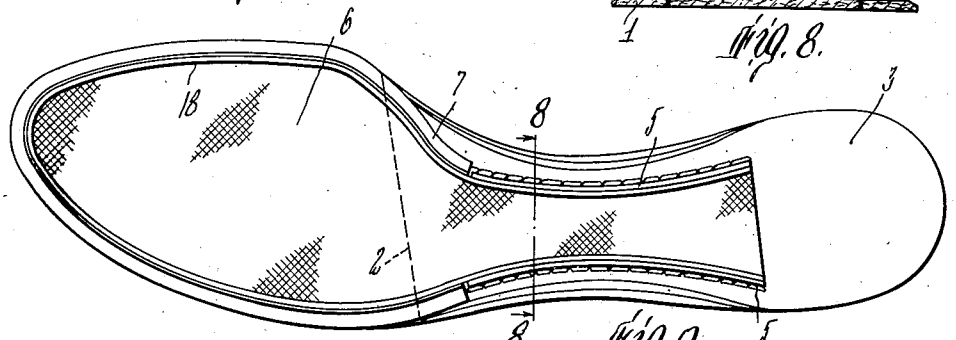


Fig. 9.

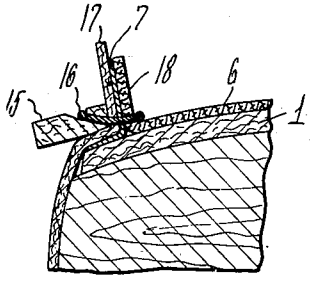


Fig. 10.

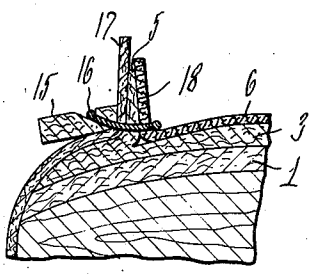


Fig. 11.

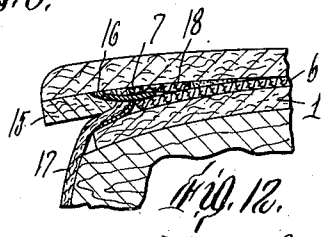


Fig. 12.

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Fig. 13.

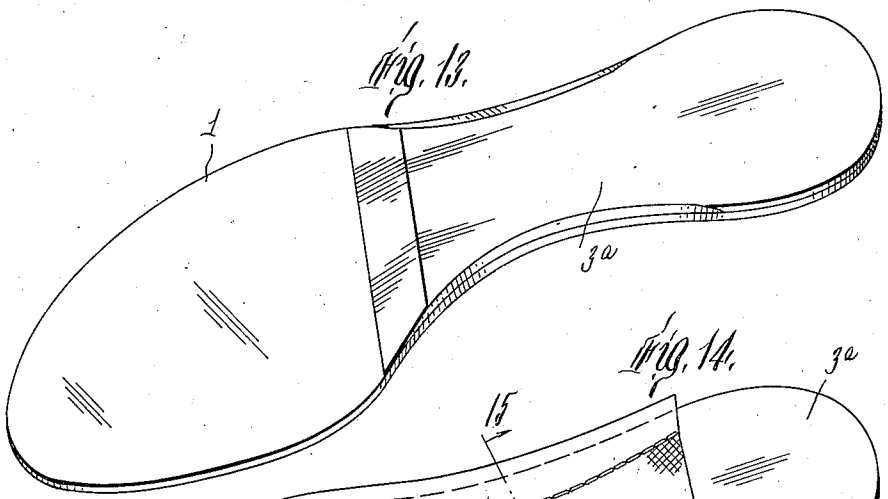


Fig. 14.

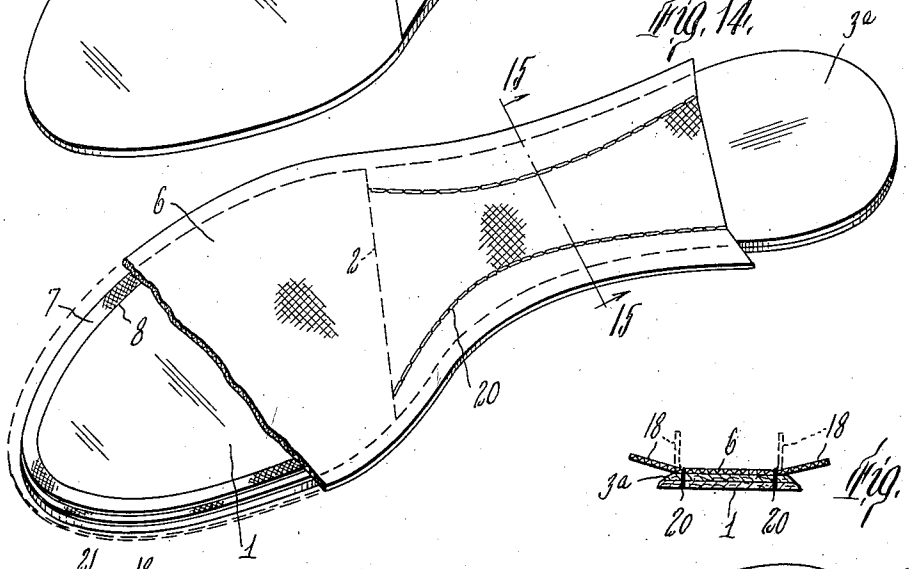


Fig. 15.

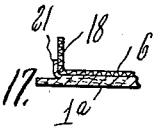


Fig. 17.

Fig. 16.

Fig. 18.

Fig. 19.

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2,368,439

UNITED STATES PATENT OFFICE

2,368,439

INNER SOLE

Fred L. Ayers, Watertown, Mass.

Application December 29, 1941, Serial No. 424,762

6 Claims. (Cl. 36—22)

This invention relates to shoe innersoles and has for an object to provide an innersole having a light weight flexible forepart and a heavier and stiffer shank and if desired with an inseam receiving rib continuous throughout the forepart and shank.

For a more complete understanding of this invention, reference may be had to the accompanying drawings in which

Figure 1 is a bottom plan view of an innersole blank having a reinforced shank and heel portion, the reinforcement in the shank being channeled.

Figures 2 and 3 are detail sectional views on lines 2—2 and 3—3, respectively, of Figure 1.

Figures 4 and 5 are detail sectional views similar to a portion of Figure 3 but showing modifications.

Figures 6 and 7 are views similar to Figure 2, but showing successive stages in further manufacture of the innersole.

Figure 8 is a sectional view on line 8—8 of Figure 9.

Figure 9 is a bottom plan view of the innersole in condition for the assembling operation.

Figures 10 and 11 are detail sectional views through the sole edge portions of the forepart and shank, respectively, of a lasted shoe after the placing of the inseam stitches.

Figure 12 is a sectional view similar to Figure 10 but showing the lasted shoe trimmed and the outersole applied.

Figure 13 is a perspective view showing a modified construction of sole blank and shank and heel reinforcement.

Figure 14 is a view similar to Figure 13 but showing the innersole in a later stage of manufacture.

Figure 15 is a detail sectional view on line 15—15 of Figure 14.

Figure 16 is a view similar to Figure 14 but showing the innersole in condition for lasting.

Figure 17 is a detail section on line 17—17 of Figure 16.

Figure 18 is a fragmentary plan view of the innersole of Figure 16.

Figure 19 is a view similar to Figure 18, but showing a modification.

Referring first to Figures 1, 2 and 3, at 1 is indicated a flat sole-shaped blank of thin stock. Since as it will later appear, it does not require to be channeled, it may be lighter and thinner than could be employed were channeling necessary. From about the break line 2 of the sole and rearwardly throughout the shank and usually also the heel portion, there is applied to the lower face of the blank a stiffening layer 3. This may well be of relatively stiff material, such as leatherboard or the like, and it may be attached to the blank as by the use of an adhesive such as rubber cement, or by staples 4, or by both staples and cement, or by any other fastening means found desirable.

As shown in Figures 1 and 3, the stiffening layer 3 may be outwardly channeled to form lips 5 extending from about the forward edge of the heel portion forwardly through the shank, and toward the forward end thereof, which is preferably skived off to form a relatively thin edge which extends to the break line 2. Lines of stitching 50 just outwardly of the lips 5 may secure the layer 3 to the blank 1. Against the lower face of the forepart of the blank and against the stiffening member 3 of the shank and preferably extending at least as far back as the forward edge of the heel seat, there is cemented a reinforcing sheet material layer 6 (see Figure 7) which is preferably a fabric such as canvas. Around the forepart of the innersole and between the outer margins of the blank 1 and the reinforcing layer 6, there is preferably cemented a piece of strip material 7 which is shown as folded longitudinally with the line of fold 8 positioned inwardly from the edge of the blank. When this strip 7 is applied to the blank before the reinforcing layer 6 is applied, the strip 7 will preferably be folded as shown so that the layer 6 may be readily applied thereto without the necessity of tucking in the reinforcing layer margin which would be necessary were the top portion of the strip 7 extended sharply away from the surface of the blank.

As shown in Figure 9, the strip portion 7 is extended rearwardly of the break line 2 so that it passes over the outer face of the stiffening layer 3 and is preferably inclined inwardly from the sole edge so as to come substantially into continuation with the ribs 5 upstanding from the stiffening layer 3. In the shank portion of the innersole between the lips 5, the reinforcing layer 6 is tucked into the angle between the ribs 5 and the portion of the stiffening layer 3 between them, as is shown in Figure 8, and also the marginal portion of the layer 6 around the forepart, together with the upper layer of the strip material 7 is turned upwardly so that there is formed a continuous inseam receiving rib on the lower face of the innersole from the forward edge of the heel seat on one side, through the shank on that

side, around the forepart and through the shank on the opposite side, back to the heel seat, this rib, including as a continuous portion thereof, the margin of the reinforcing layer 6. The strip 7 may be of paper, cloth, or any other suitable material of sufficient strength to constitute a smooth bearing for a lip turning implement or machine portion, thus to define an outer smooth margin for the inseam rib throughout the full extent of this strip. For convenience it may be termed herein a "tape."

It will be seen that this construction provides a continuous rib in connection with an innersole having as its foundation a blank of a thinness which could not be employed were it necessary to channel the blank. Thus the innersole blank may be of low cost and highly flexible in its forepart portion where flexibility is desired and more rigid throughout the shank and heel portion where added rigidity is desirable.

Instead of channeling the shank portion of the stiffening layer, a foundation rib may be secured thereto, as, for example, as shown in Figures 4 and 5, Figure 4 showing a double folded strip of fabric, or the like, as at 10, while Figure 5 shows a single strip 11. These separate strips may be secured by any suitable means, as, for example, one or more lines of stitching 12 which preferably pass entirely through the innersole, including the blank 1 and the stiffening layer 3, but as in the finished shoe the shank portion of the innersole is covered by the usual sock lining, such stitching or other fastening means does not show in the finished shoe. Throughout the forepart portion there is no stitching nor channels of any sort which might detract from the appearance of the finished shoe or result in gullies or other inequalities which might be uncomfortable to the wearer.

While the innersole may be used, if desired as the innersole of a welt shoe, it lends itself particularly well to the construction shown in Figures 10 to 12 wherein a welt or locking strip 15 is secured by stitching 16 passed through its inner edge through the upper materials, herein shown as an upper 17, and throughout the forepart through the strip 7 and the margin 18 of the reinforcing layer 6. In the shank portion back of the ends of the tape 7, this stitching will pass through the margin 18 of the layer 6 and the foundation lip such as the lip 5, as well as through the upper 17. Of course, if the constructions shown in Figures 4 or 5 are employed, the lip 5 will not be present but the lips such as 10 or 11 will be substituted therefor.

Preferably the margin 18 is turned inwardly over the inseam stitching and secured flat against the layer 6 inwardly thereof as shown in Figure 12, so that after trimming of the upper materials a plane surface is presented to which may be applied a permanent cement which bonds all the inseam parts firmly together. The outersole may then be secured by any desired means such, for example, as cement, or outersole stitching passing through the welt or locking strip 15, as may be desired.

Where it is inconvenient to extend the tape back of the break line and onto the stiffening layer 3 where it should be placed further inwardly from the margins than in the forepart, this tape may terminate at about the break line and the shank portion may be somewhat differently treated to form the continuous lip with the forepart. Constructions of this character are illustrated in Figures 13 to 19. Figure 13 shows the thin blank 1 to which the stiffening layer 3a has been applied and secured as by cement, stapling or other means, as previously described. This stiffening layer 3a is shown as unchanneled and the reinforcing layer 6, with the tape 7 extending back only to the break line, is applied thereto. The shank may then be stitched from the rear edge of the layer 6 forwardly, the forward portions of the line of stitching 20 being brought outwardly toward the margin of the innersole so that at their forward ends they are at substantially the same distance from the margin as the fold line 8 of the tape. Thereupon when the margin of the layer 6 is lifted, it forms a continuous rib with the tape at the forepart and with the lines of stitching 20 in the shank. The stitching line 20, which extends entirely through the innersole, is covered in the finished shoe by the sock lining so that it does not mar the appearance of the completed shoe.

In some cases where it is desired to use a somewhat heavier blank which can be channeled, the tape may be omitted and the blank 1a cut inwardly as shown in Figure 17 to form a light lip 21 about the forepart to which the margin 18 of the layer 6 is secured and which performs the function of the tape 7 in the constructions previously described in defining an outer edge portion of the inseam rib. This channel may extend back to the forward edge of the shank and heel stiffening layer, as, for example, the layer 3a shown in Figure 16, the stitching 20 in the shank portion of the shoe then forming the inner defining element for the margin 18 throughout the shank portion of the shoe, the stitch-receiving lip being continuous from the shank to the forepart as shown in Figure 18. Or in place of employing the reinforcing layer 3a as shown in Figure 16, the reinforcing layer 3, such as illustrated in Figure 1, with the lips 5 in the shank portion on the outer face of the margin 18 may be used, the innersole lip blank 21 then performing the same function around the forepart. Commonly it will be found desirable to stiffen the margin 18, together with any other parts secured directly thereto, as, for example, the portion of the width of the tape 7 secured thereto or the channel lips 5 or 21, and if desired the margin 18 may be bent inwardly into contact with the adjacent face of the strip 6 in the position shown in Figure 12, before the inseam stitching is secured, in which case this portion will be raised as by a plow on the inseam fastening machine for the placing of the inseam fasteners and then returned to its folded condition.

The use of tape applied to the margin of the reinforcing sheet material in the forepart, or the forepart lip used in place of the tape are not per se claimed herein as this forms subject matter of copending applications Serial Number 400,919 and Serial Number 420,075, respectively.

As in the constructions hereinbefore described, the rib may be left substantially vertical, or may be inwardly inclined for the inseam operation, and preferably thereafter, the rib is folded inwardly, at least around the forepart, into the position shown in Figure 12. In the shank portion it may be left downwardly projecting, if desired, to form a pocket within which the usual shank stiffener of metal or other similar material may be pocketed if it is desired to use such a stiffener.

While as shown herein the stitch receiving rib, when extended into the shank, has been shown as terminating at about the forward end of the

heel seat, it will be understood that it may be extended around the heel also if desired, depending upon the type of heel seat lasting desired. In shoes for babies and small children, especially, a stitching rib extending around the heel end of the innersole is often desirable.

From the foregoing description of certain embodiments of this invention, it should be evident to those skilled in the art that various changes and modifications might be made without departing from the spirit or scope of this invention as defined by the appended claims.

I claim:

1. An innersole comprising a flat sole-shaped blank, a stiffening layer secured to one face of said blank from about the break line rearwardly, a reinforcing sheet material layer secured to said face at the forepart and to said stiffening layer throughout at least the shank portion, said innersole having an inseam receiving rib continuous throughout at least the shank and forepart and including a marginal portion of said reinforcing sheet material, said rib around the forepart including also a length of strip material engaging throughout a portion of its width with the face of said blank and throughout another portion of said width with a face of said marginal portion.

2. An innersole comprising a flat sole-shaped blank, a stiffening layer secured to one face of said blank from about the break line rearwardly, a reinforcing sheet material layer secured to said face at the forepart and to said stiffening layer throughout at least the shank portion, said innersole having an inseam receiving rib continuous throughout at least the shank and forepart and including a marginal portion of said reinforcing sheet material, said rib around the forepart including also a length of strip material engaging throughout a portion of its width with the face of said blank and throughout another portion of said width with a face of said marginal portion, said length of strip material also extending into the shank portion and inclined further inwardly from the periphery of said innersole than at the forepart.

3. An innersole comprising a flat sole-shaped blank, a stiffening layer secured to one face of said blank from about the break line rearwardly, a reinforcing sheet material layer secured to said face at the forepart and to said stiffening layer throughout at least the shank portion, said innersole having an inseam receiving rib continuous throughout the shank and forepart and including a marginal portion of said reinforcing sheet material, said rib around the forepart including also a length of strip material engaging throughout a portion of its width with the face of said blank and throughout another portion of said width with a face of said marginal portion, said rib in said shank portion comprising lips channeled from said stiffening layer.

4. An innersole comprising a flat sole-shaped blank, a stiffening layer secured to one face of said blank from about the break line rearwardly, a reinforcing sheet material layer secured to said face at the forepart and to said stiffening layer throughout at least the shank portion, said innersole having an inseam receiving rib continuous throughout the shank and forepart and including a marginal portion of said reinforcing sheet material, said rib around the forepart including also a length of strip material engaging throughout a portion of its width with the face of said blank and throughout another portion of said width with a face of said marginal portion, said rib in said shank portion comprising lips channeled from said stiffening layer, said length of strip material also extending at least part way into said shank and in said shank engaging said stiffening layer.

5. An innersole comprising a flat sole-shaped blank, a stiffening layer secured to one face of said blank from about the break line rearwardly, a reinforcing sheet material layer secured to said face at the forepart and to said stiffening layer throughout at least the shank portion, said innersole having an inseam receiving rib continuous throughout the shank and forepart and including a marginal portion of said reinforcing sheet material, said rib around the forepart including also a length of strip material engaging throughout a portion of its width with the face of said blank and throughout another portion of said width with a face of said marginal portion, said rib in said shank portion comprising lips channeled from said stiffening layer, said length of strip material also extending at least part way into said shank and in said shank engaging said stiffening layer, said length of strip material and said lips being positioned against the same face of said marginal portion.

6. An innersole comprising a flat sole-shaped blank, a stiffening layer secured to one face of said blank from about the break line rearwardly, a reinforcing sheet material layer secured to said face at the forepart and to said stiffening layer throughout at least the shank portion, said innersole having an inseam receiving rib continuous throughout the shank and forepart and including a marginal portion of said reinforcing sheet material, said rib around the forepart including also a length of strip material engaging throughout a portion of its width with the face of said blank and throughout another portion of said width with a face of said marginal portion, said rib in said shank portion comprising lips channeled from said stiffening layer, said length of strip material also extending at least part way into said shank and in said shank engaging and stiffening layer and forming substantially a continuation of said lips.

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4

CERTIFICATE OF CORRECTION.

Patent No. 2,368,439. January 30, 1945.

FRED L. AYERS.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, second column, line 58, for "and" after "engaging" read --said--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 10th day of April, A. D. 1945.

Leslie Frazer

(Seal) Acting Commissioner of Patents.