Dec. 19, 1944. J. M. FRIEND ET AL 2,365,633

INSOLE FOR SHOES

Filed Nov. 24, 1943

Fig. 1.

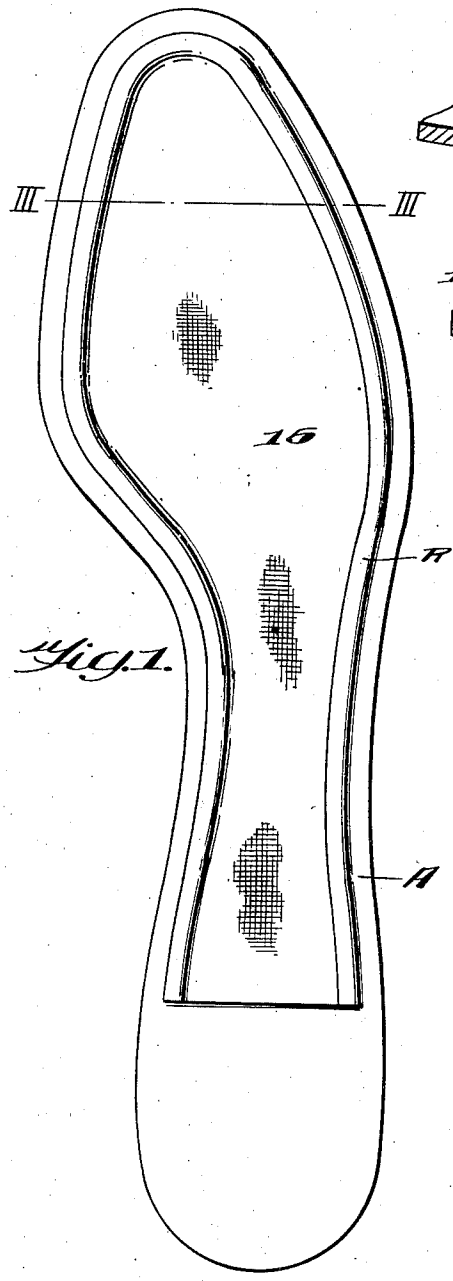


Fig. 2.

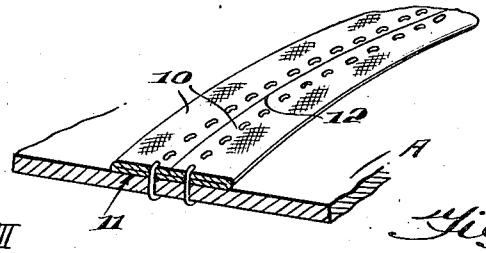


Fig. 3.

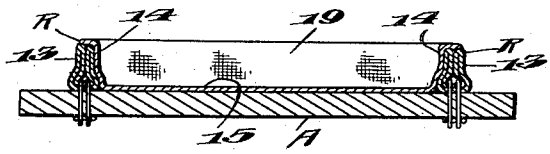


Fig. 4.

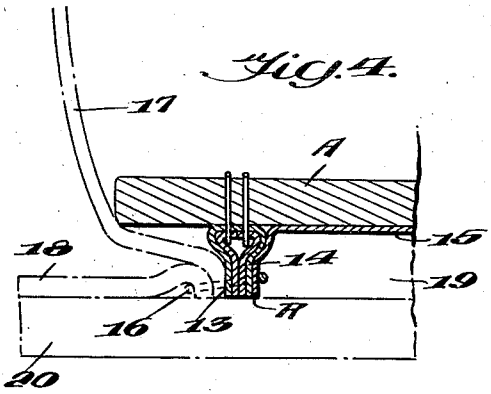


Fig. 5.

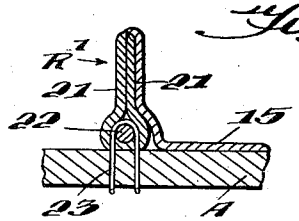
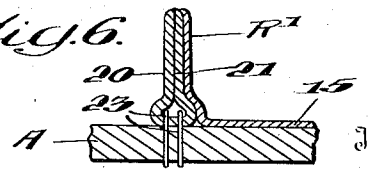


Fig. 6.



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2,365,633

UNITED STATES PATENT OFFICE

2,365,633

INSOLE FOR SHOES

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Application November 24, 1943, Serial No. 511,506

3 Claims. (Cl. 36—22)

This invention relates to insoles, particularly those which are used in the construction of welt shoes and formed with a lip or rib for receiving the stitches employed in uniting the upper, the welt and the insole together. In the manufacture of high grade welt shoes, it is the present practice to employ relatively heavy insole stock of leather possessing a thickness referred to in the art as 4½ to 6 irons. This relatively heavy stock is used in order that there may be skived or cut from the insole a marginally disposed integral attaching lip to which the shoe upper and welt strip are stitched. While this construction provides a secure and durable union between the insole and the adjoining shoe parts, it, nevertheless, necessitates the use of relatively thick leather in the body of the insole which is relatively stiff, inflexible and costly. Moreover, under present day conditions, such insole stock is difficult to obtain and decided shortages thereof exist.

Therefore, it is an object of the present invention to provide an insole in which the body thereof is formed from leather stock of reduced thickness (2 to 3 irons) and wherein the upper and welt-attaching rib is formed from an originally separate strip or tape of woven fabric, whereby to provide an improved insole of increased flexibility, amply strong for its functional purposes and less costly to produce than the integral all-leather insole of the prior art.

It is another object of the invention to provide a shoe insole having an originally separate upper and welt attaching rib joined therewith in which the rib possesses a high degree of physical strength, the rib being formed from a tape of duck or other strongly woven fabric and folded upon itself to present a plurality of adjoining layers, the folded tape being lock-stitched centrally and longitudinally thereof to the insole body, and the multiple layer unstitched portions of the strip being bent upwardly to extend substantially perpendicularly to the main plane of the insole body, said perpendicularly extending portions being adhesively united to produce a stiffened rib composed of several layers of material to which lasted uppers and welt strips may be securely stitched in permanently united order.

It is a further object of the invention to provide an improved method of producing insoles wherein the above set forth structural characteristics are produced.

For a further understanding of the invention, reference is to be had to the following description and the accompanying drawing, wherein:

Fig. 1 is a plan view of a shoe insole formed in accordance with the present invention;

Fig. 2 is a transverse sectional view partly in perspective disclosing the tape when initially folded and placed on an insole, but before being stitched to the insole;

Fig. 3 is a transverse sectional view on the line III—III of Fig. 1;

Fig. 4 is a fragmentary vertical transverse sectional view disclosing the rib construction of the insole on an enlarged scale;

Fig. 5 is a similar view disclosing a modified form of rib;

Fig. 6 is a similar view of a further modified form.

In the drawing, a shoe insole is designated by the letter A. Preferably, this insole comprises a body composed of a single layer of leather, although it may be formed from various composition materials, such as those used in the manufacture of low cost shoes. While subject to considerable variation, the stock may possess a thickness of from 2 to 3 irons ($\frac{1}{16}$'' to $\frac{3}{32}$'').

To this insole body, there is secured an originally separate inseam stitch-receiving rib, the latter being designated generally by the letter R. This rib, in the preferred form of our invention, is formed from a suitable length of a woven fabric, such as canvas or duck. In order to obtain the benefit of the maximum strength of the woof and warp threads of the fabric, the said strip or tape is bias cut. The length of the tape is such as to permit it to extend around the marginal portions of the insole in its shank and fore part regions and terminating at the breast line of the heel area of the insole. Usually the tape possesses a width of about one inch.

A tape so formed is placed on the top surface of the insole during the process of manufacture of the latter, since when the insole is incorporated in a finally made shoe, the rear part projects downwardly from the insole for engagement with the outsole. The tape initially is folded upon itself, as shown in Fig. 2, to form upper and lower layers 10 and 11 respectively, the upper layer being thus provided with centrally disposed adjoining edge portions 12. The tape so folded is placed on the upper surface of the insole at the correct marginal positions and is advanced through a sewing machine so that it will be stitched to the insole on opposite sides of the edges 12. In carrying out this stitching operation, we may employ two parallel rows of stitches which pass through the central regions of the tape, or we may employ the so-called "cross" or

zigzag stitching so that the tape on both sides of the edges 12 will be secured to the insole body. Preferably, the stitching is of the bobbin or lock type, rather than using chain stitching as the lock stitch gives enhanced permanency and more effectively resists separation between the tape and insole than is afforded by the customary chain type of stitch.

Following the stitching of the tape to the insole, the unstitched portions of the tape are turned upwardly to assume channel formation and there is applied to the exterior surfaces thereof in any suitable manner a pressure responsive adhesive or cement, whereby to effect a strong union between the folded and upstanding sides 13 and 14 of the strip, as indicated in Fig. 4. Preferably, the adhesive or cement is of a semifluid tacky nature so that it may be readily spread over the surface of the tape and impregnate the latter to a certain degree, not necessarily complete. Upon its drying, the adhesive or cement imparts a high degree of stiffness or rigidity to the multiple layer rib R, overcoming the normal flexible characteristics of the material from which the tape is formed, producing a stiffness comparable to the leather body of the insole. The adhesive or cement may be of the type commonly employed in shoe manufacture, such as the customary rubber-containing cements, pyroxylin cement, or it may be formed from different gums, resins or cellulose derivatives found in the numerous cements supplied under many names to shoe manufacturers.

In connection with the rib so formed, use is made of a liner 15. This liner is formed from square cut duct or canvas and is adhesively secured to the upper surface of the insole in a flat unwrinkled condition thereon. The margins of the liner are cut to conform with the configuration of the rib R with the outer edge portions of the liner turned upwardly and adhesively joined with the inner vertical surfaces of the ribs in order to form, in effect, the inner part of said rib, producing an additional thickness of material in the construction of the rib and through which the inseaming stitching 16 passes in uniting the shoe upper 17 and the welt strip 18 with the rib. In the further manufacture of the shoe, the pocket 19 provided within the margins of the rib R, is filled with the insulating composition such as ground cork, mineral wool or the like and the outsole 20 is stitched to the welt strip.

It will be noted that the rib R, when so constructed, possesses five thicknesses of the woven fabric which provide a high degree of mechanical strength in producing a durable non-yielding union with the associated welt strip and upper. The rib itself is anchored to the insole through the use of the double row of lock stitching. Such stitching is employed in lieu of previously proposed constructions in which a separate rib is adhesively secured to the upper surface of the insole. Further, the stitching is disposed in the center of the rib rather than at one or both sides thereof, the central position enabling the stitching to more effectively resist stresses or strains which tend to separate the rib from the insole. After the shoe upper and welt strip have been secured to the insole by the stitching 16, which passes completely through the multiple layers of the rib R, any surplus material of the rib projecting above the point of upper attachment may be removed by a cutting operation, thereby lowering the height of the rib until it is approximately even with the plane of the welt strip.

While the construction described is that which we now prefer to employ, because of the high strength of the rib and its secure attachment to the insole, yet the construction is subject to variation or modification, particularly when somewhat lower manufacturing costs may be found desirable.

Thus, in Fig. 5, the rib R1 is formed from a suitable length of tape folded centrally upon itself to provide a pair of upstanding layers 21. At the bottom of the rib and between said layers, there is disposed a reenforcing cord 22 and, preferably, by cross or zigzag stitching 23, which passes over the cord 22 and completely through the rib R1 and the insole, the tape is secured in a firm and positive manner to the margins of the insole. The upstanding layers 21 are then cemented together to impart a stiff rigid condition thereto. Further, the layers 21 are reenforced by the upstanding margins of the lining 15. This construction provides a rib for the reception of the inseam stitching which contains three layers of material, rather than five layers as provided in the preferred form.

In Fig. 6, another variation has been disclosed wherein the reenforcing cord 22 has been omitted and the rib stitched directly to the insole through a single thickness of material.

Insoles, made in accordance with this invention, can be produced from thin stock, much thinner than that required for insoles in which the rib is formed by skiving or channeling the rib from the insole body. The multiple layers from which the rib is formed in our improved construction provides all requisite strength needed in an insole rib for securely attaching the shoe upper and the welt strip to the rib. When the liner 15 is employed, additional strength is secured and an extra layer of material is provided in the cross sectional formation of the rib. Another advantage resides in the fact that our improved rib construction may be produced with standard sewing machines used in the shoe manufacturing industry and no additional or special equipment is needed.

What we claim and desire to secure by Letters Patent is:

1. An insole for use in making welted shoes comprising an insole body, an originally separate insole rib extending around the marginal portion of said body, said rib being formed from a length of fabric tape initially folded upon itself to produce upper and lower layers, stitching passing through the two layers of the tape and the insole body, the stitching being disposed adjacent to the adjoining edges of the upper layer of the tape, and adhesive means applied to the unstitched portions of the tape to unite said portions in upstanding and stiffened rib-forming order.

2. An insole comprising a shaped insole body, an orginally separate inseaming rib secured to and extending around the marginal portions of said body, said rib being formed from a length of fabric tape initially folded upon itself to provide upper and lower layers, lock stitching passing completely through the two layers of tape and said insole and uniting the tape centrally and longitudinally thereof to the insole body, the unstitched portions of said tape being turned upwardly substantially perpendicularly to the plane of the insole body and united in adjoining relationship by the application thereto of a stiffening adhesive.

3. An insole comprising a shaped insole body,

an originally separate inseaming rib secured to and extending around the marginal portions of said body, said rib being formed from a length of fabric tape initially folded upon itself to provide upper and lower layers, lock stitching passing completely through the two layers of tape and said insole and uniting the tape centrally and longitudinally thereof to the insole body, the unstitched portions of said tape being turned upwardly substantially perpendicularly to the plane of the insole body and united in adjoining relationship by the application thereto of a stiffening adhesive, and a fabric lining adhesively united with the upper surface of the insole within the confines of said rib, the marginal edges of said lining being turned upwardly for adhesive union with the inner side surfaces of said rib.

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