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R. MALING

2,926,435

FOOTWEAR AND METHODS OF PRODUCING THE SAME

Filed March 28, 1957

2 Sheets-Sheet 1

Fig. 1.

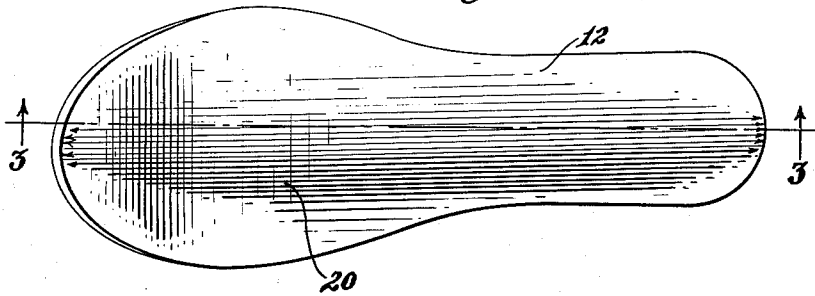


Fig. 2.

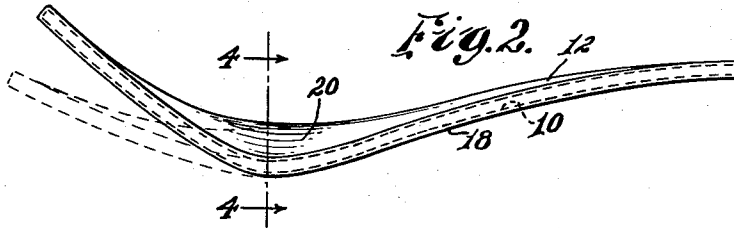


Fig. 3.

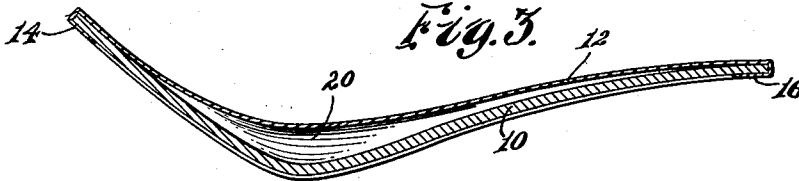


Fig. 5.

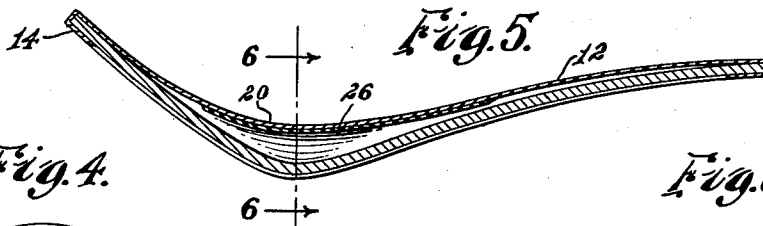


Fig. 4.

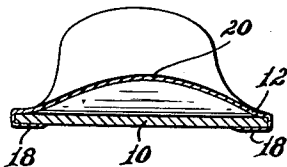


Fig. 6.

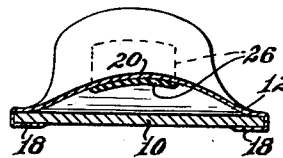
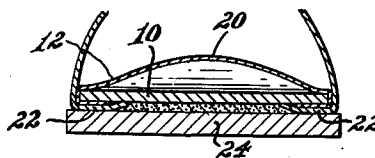


Fig. 7.



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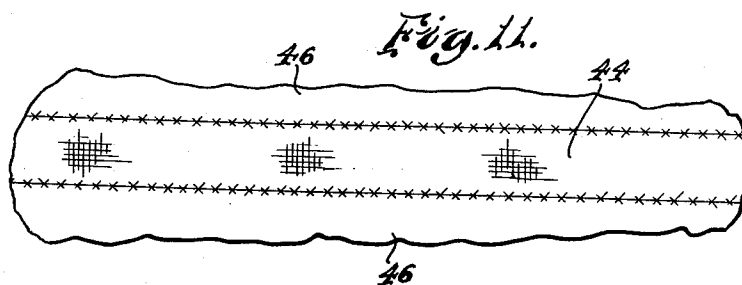
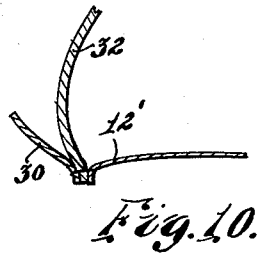
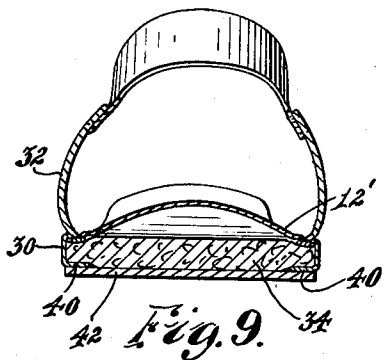
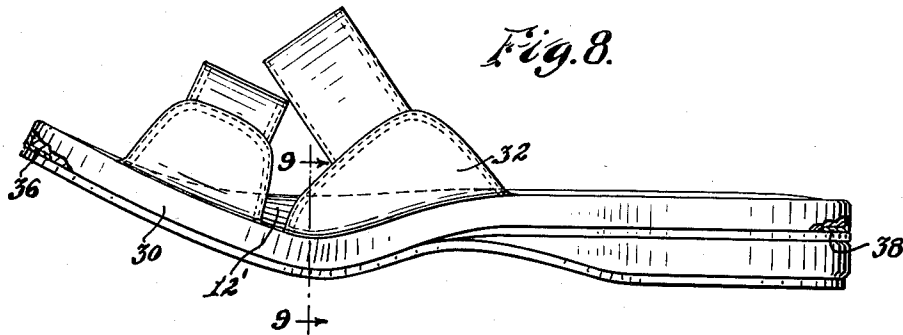
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FOOTWEAR AND METHODS OF PRODUCING THE SAME

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2 Sheets-Sheet 2



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FOOTWEAR AND METHODS OF PRODUCING THE SAME

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4 Claims. (Cl. 36—58.5)

This invention relates to improvements in footwear and methods of producing the same. More particularly the invention provides structural improvements which may be utilized in shoes and slippers generally by following that herein disclosed novel shoemaking procedure which is applicable for any particular variety of footwear.

It is among the objects of the invention to provide shoes and slippers embodying structural features which improve the fit and feel of the shoe or slipper on the foot, in that built-in means constantly biases the forepart toward the fully flexed condition it assumes when a person wearing the footwear takes a step in walking, and creates a tensioned transversely arched foot-engaging surface which is resiliently yieldable under the pressure of the foot at the region of flexing of said forepart.

Another object of the invention is to provide shoes and slippers wherein the covering element which provides the finished and exposed interior surface at forepart and shank regions is secured at opposite sides of the forepart and shank regions and is longitudinally tensioned centrally between said opposite sides, whereby said covering element assumes a transversely arched condition extending between its said securement at said opposite sides, there being resiliently stretchable means longitudinally tensioned at said transversely arched portions of said element whereby said arched portions are resiliently yieldable under pressure of a foot in a said shoe or slipper.

Yet another object of the invention is to provide a resiliently yieldable transversely arched and exposed interior shoe and slipper structure which conveniently and effectively may be built into shoes and slippers of any of the conventional varieties to attain improved fit and feel of footwear while preserving a generally attractive covered effect at the exposed interior of the footwear.

It is, moreover, a general purpose and object of the invention to provide improvements in the method of producing footwear and in footwear structures, especially for footwear wherein the forepart is constantly resiliently biased longitudinally toward the flexed condition it assumes during normal use of the footwear in walking.

In the accompanying drawings:

Fig. 1 is a top plan view of an intermediate product embodying features of the invention;

Fig. 2 is an edge elevation of the intermediate product of Fig. 1;

Fig. 3 is a cross-sectional view on line 3—3 of Fig. 1;

Fig. 4 is a cross-sectional view on line 4—4 of Fig. 2;

Fig. 5 is a view generally similar to Fig. 3 but showing a modified form of intermediate product;

Fig. 6 is a cross-sectional view on line 6—6 of Fig. 5;

Fig. 7 is a cross-sectional view of a shoe equipped with the intermediate product of Figs. 1-4, the section being approximately at the location of line 4—4 in Fig. 2;

Fig. 8 is a side elevation of a slip-lasted shoe embodying features of the invention;

Fig. 9 is a cross-sectional view on line 9—9 of Fig. 8;

Fig. 10 is a fragmentary view of a portion of the slip-lasted upper of Fig. 9, on a larger scale; and

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Fig. 11 shows a modified form of covering element which is longitudinally stretchable.

Referring to the drawings, the invention as illustrated in Figs. 1-7 is embodied in an intermediate product which comprises an innersole member 10 and a covering element 12 of material which has substantial elasticity longitudinal of the innersole member 10. According to the invention, the covering element 12 is combined with member 10 by stretching it longitudinally and centrally of member 10 and wrapping opposite end margins of the stretched central portion over edge portions of member 10 at the toe and heel ends of said member and securing the said wrapped portions to the under margin of member 10 at the said toe and heel ends thereof as indicated at 14, 16 in Fig. 3. The inherent resiliency of the secured stretched central portion of element 12 tends relatively strongly to pull the toe and heel ends of member 10 toward each other. However, while member 10 is held substantially flat, the relatively unstretched margins of element 12 are wrapped over the edge of member 10 and secured to its under margin all around the innersole member 10 as indicated at 18 in Fig. 4. When the covered innersole member 10 is released, the resiliency of the central longitudinally stretched portion of covering element 12 flexes the innersole member but the side securements of element 12 restrain the flexing tendency and the intermediate product acquires a shape substantially as illustrated in Figs. 2 and 4 wherein the longitudinally tensioned covering element 12 is spread substantially away from innersole member 10 at the portions which will be at shank and forepart regions of a shoe, and forms a transversely extending arch 20 over the region of the innersole member 10 which undergoes flexing in a shoe. The cover element 12 completely encloses all underlying surface portions of member 10 and provides an attractive smoothly convex resiliently yieldable surface which becomes exposed interiorly of a completed shoe.

The intermediate product or unit of Figs. 1-7 may be pressed into engagement with the bottom of a last with introduction of additional stretch in element 12, due to reduction of the flexed condition of the unit, and it may be tacked to the last in a conventional manner preliminarily to lasting of a shoe upper to the covered innersole member 10, as indicated at 22 in Fig. 7, and attachment of an outersole 24 in accordance with any conventional procedures. When the completed shoe is removed from the last, the covering element 12 tends to return to its condition of Figs. 2-4 and will effect flexing of the completed shoe, more or less, depending upon the magnitude of the resilient force of the stretched portion of covering element 12. In any event, however, the stretched covering element constantly biases the shoe toward its condition of maximum flexing, and a foot in the shoe materially increases this bias when it presses upon the said transverse resiliently yieldable arc 20 in the act of walking. Assuming that at least the forepart of the shoe will have shoe upper portions securing the forepart on the foot, the said increased bias tends to maintain the heel portion of the shoe pressed against the foot when the shoe flexes in the act of walking, thereby improving the fit and heel of the shoe on the foot.

The magnitude of the resilient force of the stretched covering element 12 may be increased as desired by providing a stretchable element at the under side of the covering element 12, as indicated at 26 in Figs. 5 and 6. Stretchable element 26 may be secured to the under surface of covering element 12 to act as a stretchable reinforcement of the covering at the region of its extent, or it may be otherwise embodied between the covering element and innersole member 10 for increasing the resist-

ance offered to depression of the transverse arch 20 by a foot in a shoe in the art of walking.

Referring to Figs. 8 and 9 wherein the invention is shown embodied in a slip-lasted variety of footwear, the resiliently stretchable covering element 12' is shown stitched to a platform wrapper strip 30 all around the shoe, and is stitched to portions of the shoe upper 32 at opposite sides of the shoe. After element 12', wrapper strip 30 and the side portions of upper 32 have been stitched and a last inserted therein, the covering element 12' will be stretched longitudinally and centrally similar to the previously described stretching of element 12' and the wrapper at the toe and heel ends of the stretched element 12 will be wrapped over the edges of a flexible platform element 34 and secured to under marginal portions of the platform element as at 36 and 38. Then the remaining portions of the wrapper strip will be wrapped over the edge portions of the platform element and secured to under marginal portions of the platform element as at 40, thereby to secure the opposite relatively untensioned side portions of element 12' to the platform element 34.

An outersole member 42 then may be secured in place on the platform element to complete the shoe. When the last is removed from the completed shoe, the covering element acts resiliently to flex the shoe generally to its condition of Fig. 8, and the covering element 12' assumes a transversely arched condition as shown in Fig. 9, and presents an attractive smoothly convex resiliently yieldable surface exposed interiorly of the shoe, generally the same as described in connection with Figs. 1-7.

It will be seen that the invention provides a method and means involving longitudinal stretching of a resiliently stretchable covering element at a region centrally between the side edges of the element, and initially securing the opposite ends of the stretched portion of the element to an underlying flexible structural member of a shoe, such as an innersole member or a platform member, thereby to relatively strongly bias forepart and rearpart portions of said structural member toward each other with intermediate flexing of the member. Opposite relatively unstretched side portions of the covering element are then secured to the said structural member so that the covering element creates a resiliently yieldable transverse arch extending from side to side of the shoe at least at shank and adjacent forepart regions of the shoe. This method and structure is applicable in any of the conventional varieties of shoes, for improving the fit and feel thereof on a foot, and for providing the previously mentioned attractive interior exposed surface.

The covering elements 12, 12' may be variously formed to attain desired degrees of resistance to being stretched at the central longitudinal region of stretching, and to create distinctive design effects at the said interior exposed surface of a shoe. For example, the central longitudinal region of stretching may have suitable resiliently stretchable material therein as at 44 in Fig. 11, and relatively non-stretchable material 46, such as leather, may be secured to opposite side edges of the material 44 as indicated in Fig. 11. The side material 46, in this case, will become secured at opposite side regions of the shoe to the previously mentioned sole member which is to be covered.

Various changes may be made in the illustrated embodiments of the invention within the scope of the appended claims, and it is intended that the patent shall cover, by suitable expression in the appended claims, whatever features of patentable novelty exist in the invention disclosed.

I claim as my invention:

1. The method of making a shoe, comprising stretching a flexible, resiliently stretchable covering element at a longitudinal central region thereof and combining said stretched element with an underlying sole member by securing said element to said sole member at two loca-

tions widely spaced apart along a longitudinal central region of said sole member with said resiliently stretchable area between said two locations of securing, thereby to resiliently bias the sole member to a flexed interiorly concave condition in which said longitudinally stretched central region of said element bridges the concavity, and drawing opposite side edges of said bridging portion of said element outwardly and downwardly with lateral tensioning thereof to form said element into a smoothly curving transverse arch throughout the said bridging extent of said element, followed by securing of said opposite side edges of said element to opposite side edges of said sole member, and completing the shoe with said transversely arched portions of the covering element providing a transverse smoothly curving resiliently yieldable convex surface exposed interiorly of the shoe throughout the said longitudinally bridging extent of said covering element.

2. In the art of shoe manufacture the method of combining a sole member and a covering therefor comprising arranging a covering sheet upon a sole member and longitudinally stretching a resiliently stretchable longitudinal central region of the covering element and securing opposite end portions of the stretched region of the element to said sole member at two locations widely spaced apart along a longitudinal central region of said sole member, whereby said stretched region of the covering element flexes an intermediate region of the sole member to provide a substantial concavity between said element and member with said longitudinally stretched region of the element resiliently bridging the concavity, increasing the resilient force of the covering element by embodying a stretchable reinforcement in said stretched longitudinal central region between the covering element and said sole member, and drawing opposite side edges of said element outwardly and downwardly, with transverse tensioning thereof, to form said element into a resilient smoothly curving transverse arch throughout the said bridging extent of said element, and then securing said opposite side edges of said element to opposite side edges of said sole member.

3. In a shoe, a flexible sole member and a flexible longitudinally stretchable covering element disposed over the upper surface of said sole member and connected, in a stretched condition, to said sole member at two locations widely spaced apart along a longitudinal central region of said member, whereby said member is flexed by said element to provide a substantial concavity between said member and element, the said concavity being resiliently bridged by said longitudinally stretched region of said element, said element being formed into a smoothly curving resilient transverse arch throughout the said longitudinally bridging extent of said element, and said transverse arch being maintained by means at opposite sides of the shoe securing opposite side edges of said element to opposite side edges of said sole member throughout the said longitudinally bridging extent of said element, whereby said element presents a resilient smoothly curving transversely convex exposed surface interiorly of the finished shoe extending from side edge to side edge of said sole member throughout the said longitudinally bridging region of said element.

4. In combination, a flexible sole member and a covering element therefor tensioned longitudinally along a central region and having its said tensioned region secured at its opposite end portions to toe and heel portions of said flexible sole member, said tensioned central longitudinal region having stretched elastic material therein whereby said sole member is flexed to provide a substantial concavity therein between said member and said element with said longitudinally stretched region of said element bridging the concavity, said element being formed into a smoothly curving transverse arch extending from side edge to side edge of said sole member throughout the said longitudinally bridging extent of said element,

stretchable means embodied between the covering element and flexible sole member and reinforcing said element in said longitudinal central stretched region and means securing opposite side edges of said element to opposite side edges of said sole member throughout the said longitudinally bridging extent of said element.

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2,407,498
2,761,225
2,776,503

References Cited in the file of this patent

UNITED STATES PATENTS

Johnson ----- Sept. 10, 1946
Presti ----- Sept. 4, 1956
Maccarone ----- Jan. 8, 1957