April 27, 1926. 1,582,260

F. M. FURBER

SHOE

Original Filed Sept. 6, 1918

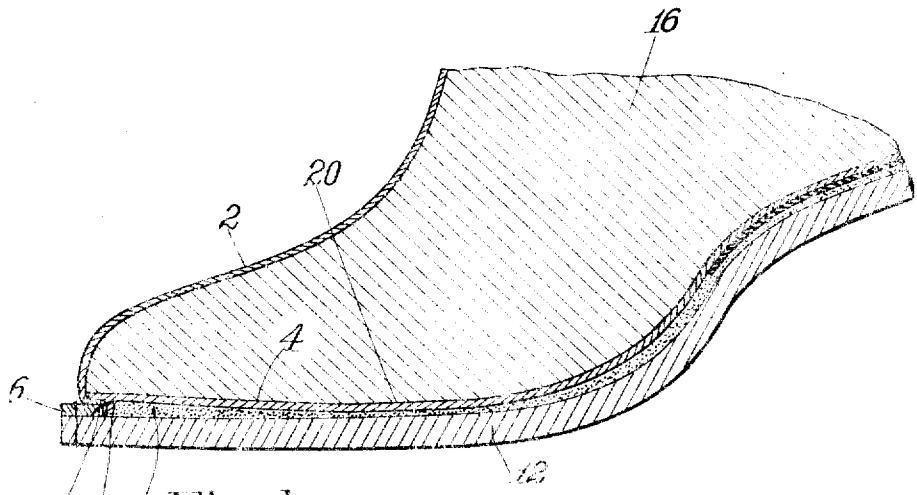


Fig. 1.

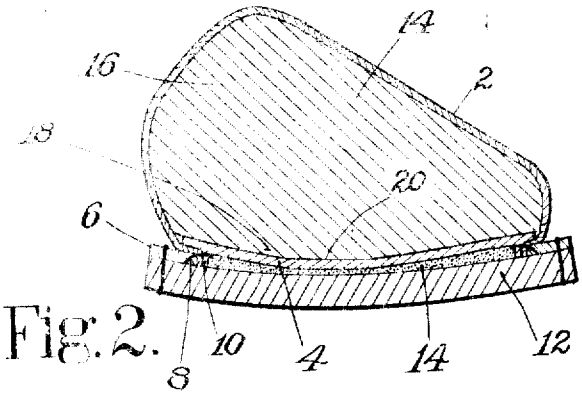


Fig. 2.

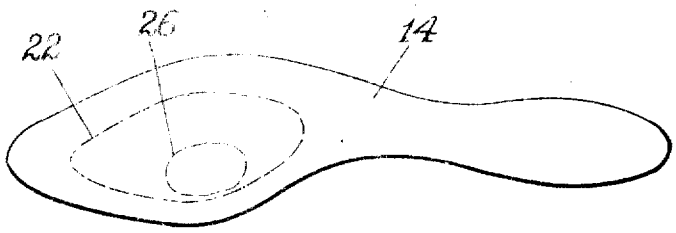


Fig. 3

INVENTOR

Frederick M. Furber

Patented Apr. 27, 1926. 1,582,260

UNITED STATES PATENT OFFICE.

FREDERICK M. FURBER, OF REVERE, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SHOE.

Application filed September 6, 1918, Serial No. 252,868. Renewed January 13, 1923.

To all whom it may concern:

Be it known that I, FREDERICK M. FURBER, a citizen of the United States, residing at Revere, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Shoes, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

The present invention relates to the manufacture of shoes and more especially has to do with shoes provided with improved shoe bottom elements adapted to replace that portion of the shoe bottom which is commonly termed the "filler". In other aspects, the invention relates to a novel sheet-stock filler and to a novel shoe bottom unit including an outsole and an attached filler. Moreover, the present invention is in the nature of a further development of the invention set forth in a prior co-pending application filed by the present applicant on December 4, 1918, Serial No. 263,802.

It is a principal object of this invention to provide a welt shoe embodying an improved filler shaped to occupy the recess between the outsole and insole and within the inseam and thereby increase the serviceability of the shoe and render it more comfortable throughout its life than shoes embodying fillers heretofore used.

With this object in view, the invention, in one aspect, comprises a shoe in which there is interposed between the insole and outsole an intermediate sheet-stock filler of non-plastic, and preferably non-compressible, material recessed to present on its insole-engaging face a concavity under the ball of the foot and a gradually increasing thickness outwardly in all directions therefrom and to present on its outsole-engaging face a convex surface of less curvature than the concavity of its insole-engaging face. In another aspect, the invention provides a bottom unit, as an article of manufacture, which comprises such a filler of varying thickness attached to an outsole which is shaped to the lateral and longitudinal curvatures desired in the completed shoe. The novel filler, considered more specifically, besides having a thickness decreasing to a minimum under the ball of the foot, is also peripherally contoured so as approximately to fill the recess at the forepart of the shoe within the inseam and between the soles.

The invention will now be described with the aid of the accompanying drawings and will then be more definitely pointed out in the claims.

Fig. 1 is a longitudinal section through a shoe embodying the present invention;

Fig. 2 is a transverse section through the ball portion of the shoe.

Fig. 3 is a plan view of a preferred form of the filler itself.

In the accompanying drawings a shoe of the Goodyear welt type is illustrated, 2 designating the shoe upper, 4 the insole and 6 the welt, the three parts being secured together by the stitches 8 to the rib 10 formed on the insole and the outsole 12 sewed to the projecting portion of the welt. It will be noted that a recess or space remains within the inner edge of the welt or inseam and between the insole 4 and the outsole 12 which space has heretofore been filled with a plastic compound termed a "filler".

In accordance with the present invention a unitary shoe-bottom element or filler is provided to occupy the recess within the inseam of the shoe bottom. In the illustrated embodiment the filler 14 consists of a material which is tough, non-resilient or inelastic, non-plastic and substantially non-compressible under the weight of the body so as to maintain constantly its normal thickness and which will resist disintegration, separation or change of position brought about by the human foot under the conditions of pressure, temperature and wear to which shoes are constantly subjected. Also, this material is preferably of a water-excluding character and wear-resisting to a certain degree and it can be died out to the peripheral contour desired and can be skived to a varying thickness corresponding to the space which it is to occupy in the shoe. I have found by experiment that a suitable material for this purpose is compressed felt impregnated with bituminous or like material so as to be unaffected by moisture or any heat to which the shoe may be subjected under ordinary conditions of use and at the same time provide a substantially non-compressible and flexible body.

In practice the material of which the filler is to be made is provided in sheet form of a uniform thickness and the fillers for the various sizes and styles of shoes are died out with dies in a similar manner to leather soles. In this way each filler is preferably given a peripheral contour corresponding approximately to the shape of the recess within the inseam of the particular size of shoe with which it is to be used. As shown in Figs. 1 and 2 of the drawings, the depth of the recess to be filled varies considerably both transversely and longitudinally of the last 16, this being due to the difference in curvatures between the bottom of the last to which the insole 4 conforms and the outsole 12 when it is seated upon the shoe bottom. The bottom of the last is contoured to correspond approximately to the contour of the bottom of the foot and accordingly the portion of the last bottom underlying the ball of the foot indicated at 18 is considerably lower than adjacent portions and the transverse curvature of the last bottom is such as to cause the foot engaging surface 20 of the insole to present a correspondingly curved surface for that portion of the foot. Also, the last is curved longitudinally to provide the proper amount of "spring" for the shoe at the toe. On the other hand, the outsole 12 is required to present a substantially horizontal transverse surface to furnish a broad walking surface for the shoe and a substantially flat tread surface from the toe to the ball line of the shoe. These differences in curvatures vary the depth of the recess within the inseam at different points, the maximum depth being ordinarily along the margin of the recess and adjacent to the inseam, as illustrated in Fig. 2, while the minimum depth is at the ball portion as shown. In order that this filler 14 may conform accurately to the curvature of the bottom of the last 16 and to the lower upper surface of the insole 4 and at the same time provide a suitably shaped surface upon which to seat the outsole 12, the thickness of the filler is varied approximately according to the varying depth of the recess in which it is to fit. Conveniently this is accomplished by removing from a predetermined portion of the upper surface of the filler material one or more skivings of suitable thickness to adapt the filler to the required curvature. A machine which may be readily used for this purpose is one like that shown in Patent No. 671,072, granted Apr. 2, 1901, on application of J. R. Scott. In utilizing this machine the matrix into which the material is forced by the presser roll to bring the desired portion of it against the skiving knife is preferably shaped to remove an elliptically-shaped skiving somewhat as indicated at 22 from the upper surface of the filler of an area which will produce a decreasing thickness of the filler from near its outer margin, as shown in Figs. 2 and 3. An additional decrease in the thickness of the filler is also preferably provided substantially opposite the ball of the foot as at 26. By using a skiving machine or other suitable means to reduce the thickness of each filler to correspond to the varying depths of the recess the fillers can be conformed accurately to the particular requirements of each size and style of shoe and while they constitute in this respect individual fillers they may be made more economically and at less cost than fillers which are independently molded to the contour of each shoe.

For incorporating the filler in the shoe it is preferably first attached to the upper or flesh side of the outsole which is also to be incorporated in the shoe. The attachment of the filler 14 and the outsole 12 is preferably accomplished by an adhesive cement which will permanently hold the two members in a close union and exclude water. This is of considerable practical value not only because it insures against even a slight shifting of the filler in the shoe but also because it acts to exclude any water from between the lower surface of the filler and the adjacent surface of the outsole after the sole has become worn through to the filler. This combined filler and outsole, constituting a novel shoe bottom unit, is a feature of the present invention. This unit is applied to the shoe, the filler being inserted in the recess within the inseam and having its insole engaging surface adapted to the contour of the insole and therefore of the last, the filler also facilitating the proper positioning of the outsole on the shoe through the engagement of the edge of the filler at a plurality of points with the insole rib. The outsole is then secured to the welt of the shoe in the usual manner.

It will be seen that with a filler such as above described a compact and wear-resisting bottom is provided for the shoe. By reason of the minimum thickness of the filler at a point which comes under the ball of the foot and the gradually increasing thickness both longitudinally and transversely therefrom, the filler approximately fills the recess within the inseam and between the insole and the outsole so that the contour of the insole to correspond to that of the foot is maintained. With the present plastic fillers, the tendency of the foot to roll or tread over either to one side or the other of the shoe due to weakness in the muscles of the foot or other causes is aggravated because the shifting of the filler to the opposite side of the shoe under the abnormal pressure exerted upon it helps to throw the foot in the direction of the roll with the result that the pose of the person wearing the shoe is

thrown out of balance. This condition also lessens the serviceability of the shoe because the displacement of the filler causes the sole to bulge out and consequently that portion is subject to greater wear and abrasion than other portions of the tread. By providing a filler which conforms accurately to the contour imparted to the insole by the last and to the outsole and which is substantially non-compressible and nondisplaceable, the insole and outsole are permanently maintained in their relative conformations during the life of the shoe. Moreover, since the filler is of a character which will resist the pressure of the foot and especially any abnormal pressure by reason of the tendency of the foot to tread to either side, the foot is not continually subject to strain when walking and the tread surface of the sole is not placed under a localized abrasion during wear of the shoe. The importance of a shoe bottom which will maintain the proper balance of the foot on the walking surface and prevent it from "running over" can not be overestimated when it is appreciated that such a condition depreciates the serviceability and appearance of the shoe, to a larger extent than the actual abrasion on the shoe, by distorting the sole and the shoe upper, wearing the heels of the shoes unevenly and straining and twisting the seams connecting the various shoe parts.

Having described my invention in connection with the accompanying drawings, I claim as new and desire to secure by Letters Patent of the United States:

1. A sheet-stock shoe-bottom filler of non-plastic material shaped approximately to fill the recess at the forepart within the inseam and between the insole and the outsole of a welt shoe and having a thickness gradually decreasing longitudinally and transversely to a minimum at the portion which comes under the ball of the foot in the shoe.

2. A sheet-stock shoe-bottom filler of non-plastic material peripherally contoured to fit within the inseam of a welt shoe and presenting substantially its full thickness at its edge around the toe end and skived to a minimum thickness at the portion which comes under the ball of the foot in the shoe.

3. A shoe comprising an insole, an outsole and an intermediate sheet-stock shoe-bottom filler of non-plastic material recessed to present on its insole-engaging face a concavity under the ball of the foot and a gradually increasing thickness outwardly in all directions therefrom and to present on its outsole-engaging face a convex surface of less curvature than the concavity of its insole-engaging face.

4. A welt shoe comprising a ribbed insole, an outsole and an intermediate sheet-stock shoe-bottom filler of non-resilient and non-plastic material recessed to present in the forepart a maximum thickness at its edge and a gradually decreasing thickness from near its edge inwardly over the ball area and peripherally contoured approximately to fill the recess within the rib of the insole around the forepart and in the shank.

5. As an article of manufacture, a shoe bottom unit comprising an outsole shaped to the lateral and longitudinal curvatures desired in the completed shoe and an attached filler of non-compressible material shaped to present a thickness gradually decreasing to a minimum at the portion which comes under the ball of the foot in the shoe.

In testimony whereof I have signed my name to this specification.

FREDERICK M. FURBER.

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In testimony whereof I have signed my name to this specification.

FREDERICK M. FURBER.

Certificate of Correction.

It is hereby certified that in Letters Patent No. 1,582,260, granted April 27, 1926, upon the application of Frederick M. Furber, of Revere, Massachusetts, for an improvement in "Shoes," an error appears in the printed specification requiring correction as follows: Page 2, line 45, strike out the word "upper"; 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 13th day of July, A. D. 1926.

[SEAL.]

M. J. MOORE,
Acting Commissioner of Patents.

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