Nov. 27, 1928. 1,693,535

P. C. WOLFER

PROCESS OF MAKING BOOTS AND SHOES

Filed July 11, 1927 2 Sheets-Sheet 1

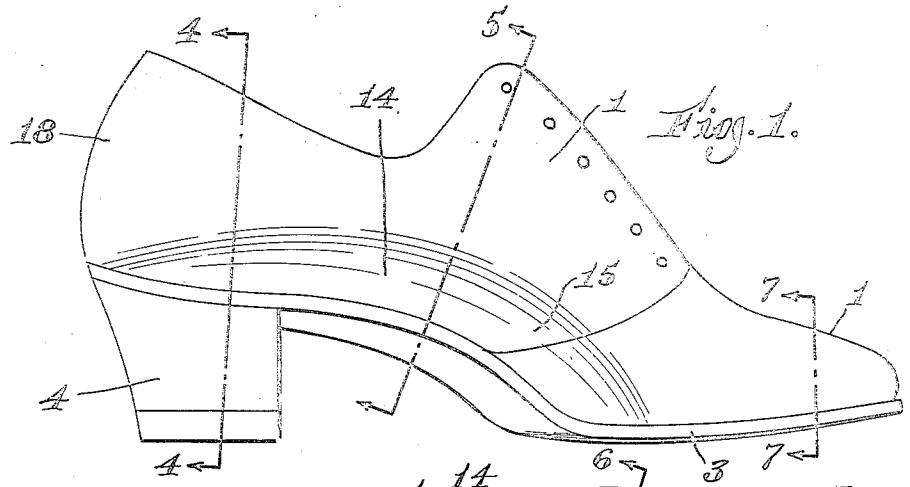


Fig. 1.

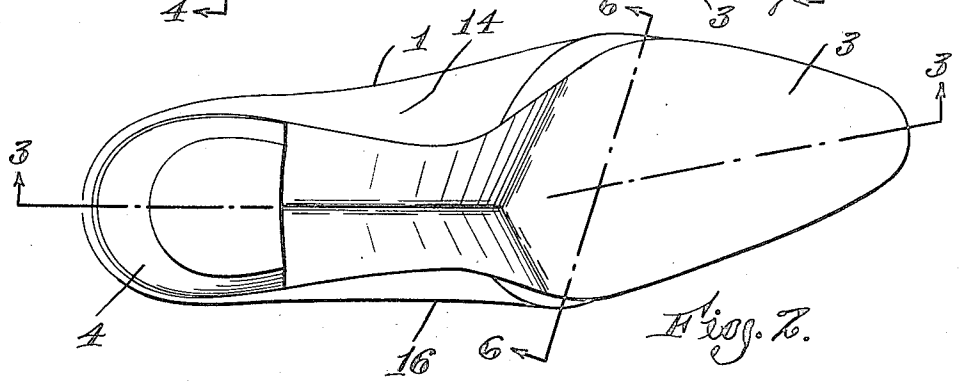


Fig. 2.

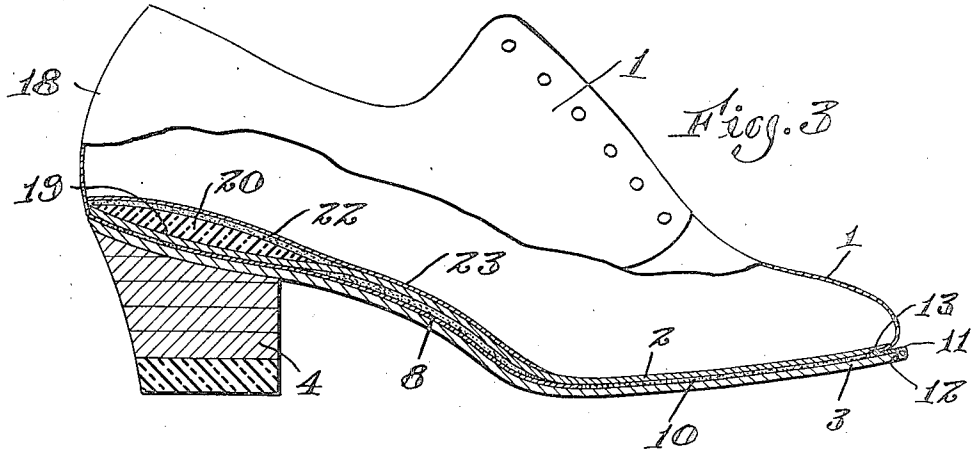


Fig. 3

Inventor
Paul C. Wolfer
by James A. Hobbs
Attorney

Nov. 27, 1928. 1,693,535

P. C. WOLFER

PROCESS OF MAKING BOOTS AND SHOES

Filed July 11, 1927 2 Sheets-Sheet 2

Fig. 4.

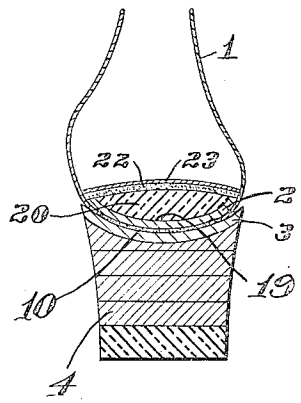


Fig. 5.

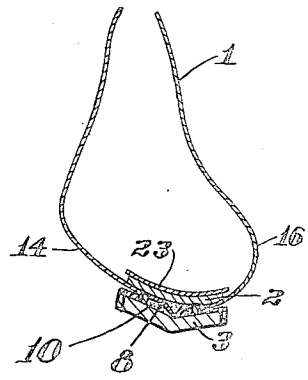


Fig. 9.

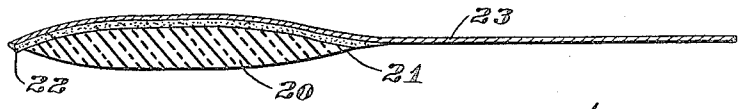


Fig. 6.

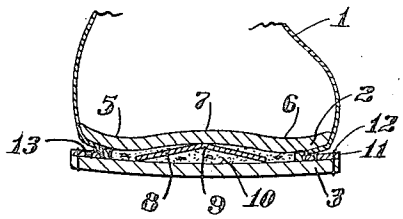


Fig. 7.

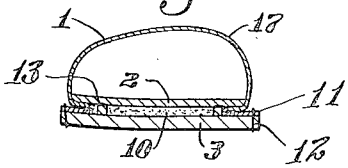


Fig. 8.

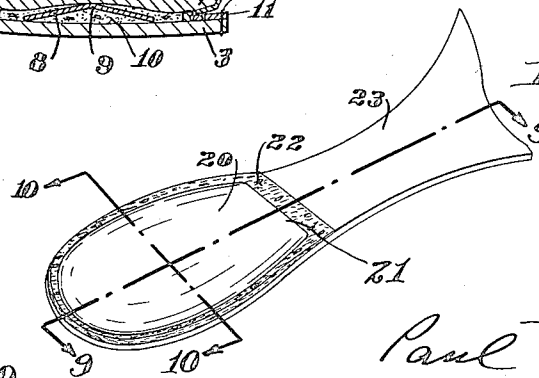
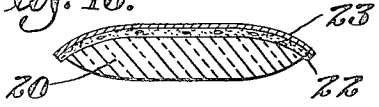


Fig. 10.



Inventor
Paul C. Wolfer
by James A. Hodder
Attorney

Patented Nov. 27, 1928. 1,693,535

UNITED STATES PATENT OFFICE.

PAUL C. WOLFER, OF EVERETT, MASSACHUSETTS.

PROCESS OF MAKING BOOTS AND SHOES.

Application filed July 11, 1927. Serial No. 204,727.

My present invention relates to boots and shoes, and more particularly to an improved shoe designed to support and correct the foot of the wearer, and relates also to the novel method of manufacturing such shoes.

An important object of the present invention, therefore, is the provision of a shoe which will maintain normal feet in their normal condition and which will, at the same time, give the necessary support and correction to feet which are in need of such support and correction.

I utilize, in the present process of shoe manufacture, the novel last illustrated and described in my copending application Ser. No. 204,231, filed July 8, 1927, which last is essential in the production of my present novel shoes.

In carrying out my present invention, and constructing my novel shoe, I utilize and combine many advantageous features therein, all of which features cooperate to produce a scientifically designed and proper shoe. Many attempts have been heretofore made to produce a shoe of this type, but none of these shoes has been completely satisfactory in use, as all of the same laid too much emphasis on some particular feature and did not result, as my present shoe, in a well balanced, scientifically correct shoe.

To produce this desirable shoe, I provide, on the inner bottom surface thereof, a pair of pockets, created by apexes designed therefor on the last. These pockets are arranged to coincide with the position of the inner and outer balls of the feet of the wearer, and between the pockets I provide a metatarsal arch support, the pockets being on a diagonal line in the shoe. Provision for this metatarsal arch support is made in the construction of the last of said copending application, wherein a depression is formed between the apexes of the last, and the insole is beaten into and around this depression, permitting the apexes to form the above mentioned pockets, and providing, on the insole, a raised portion or metatarsal arch support. I may, if desired, utilize a shank stiffener with an arch supporting portion which will accentuate the metatarsal arch supporting portion of the shoe. By providing these pockets, adjacent the metatarsal arch supporting portion, the vamp line at the throat of the shoe is eased, allowing an easy and natural break between the toe and ball.

In order to provide for the longitudinal arch of the foot of the wearer, I cut the entire inside arch of the last quite deep, particularly just in back of the ball. This deep cut arch of the last is accented in the construction of the shoe, and results in the natural support of the entire longitudinal arch of the foot. The shoe is also provided with increased fullness at the cuboid portion, thus allowing the foot to rest in a broad depression in the shoe, forcing the arch into the proper curved position. This shoe construction insures against gaping of the sides and slippage of the heel.

The width of the tread of the shoe is designed to comfortably contain the toes and ball of the foot, while in no way detracting from the appearance of the footwear. The roll on the toe of the shoe is a very distinctive feature, and permits accomodation of the toes in a comfortable manner. This roll of the shoe terminates at the great toe, where it recedes, resulting in a forepart of attractive appearance and pronounced style and character.

The back of the shoe, or heel curve, is so pitched that there will be no chafing on the heel cord, and the entire heel will be seated uniformly without undue pressure in or on any one place.

A further and very important feature of the present invention is the particular construction of the heel seat of the shoe. Due to the peculiar construction of my novel last of said copending application, the resulting shoe is made with a deeply cupped heel seat, thus providing room for the particular type of heel rest illustrated and described herein. This heel rest and deeply cupped heel seat not only allow the fleshy part of the heel to fill out the entire surface of the heel seat, but also allows the heel to rest comfortably and in a normal position on the heel rest, thus assuring a positive and comfortably fitting heel.

Thus the heel and ball-tread is so balanced that throwing of the foot into an abnormal position is eliminated, and the interior of the shoe is shaped to conform to the anatomy of the foot.

My present novel heel rest comprises a cushion, preferably of sponge rubber or similar material, convex on each side and flattened out at the breast portion. Between this cushion and the sock lining, I preferably apply a layer of insulating material, such as cork, which cork will act as an insulating and

moistureproof layer, keeping the moisture of the foot away from the sponge rubber cushion, and preventing deterioration of the same. The three last named elements, viz., cushion, cork and sock lining, are preferably assembled and secured together as a unit, and then inserted into the shoe as a unit, over the insole.

I believe that my present shoe, above briefly described is novel, and I have therefore claimed the same broadly herein, as well as the process of making the same, which I also believe to be novel.

Further features of the invention, novel combinations of parts, advantages and details of construction, will be hereinafter more fully pointed out and claimed.

Referring to the drawings, illustrating a preferred embodiment of the present invention,

Fig. 1 is a side elevation of my novel shoe;

Fig. 2 is a bottom plan view of the shoe;

Fig. 3 is a longitudinal sectional view on the line 3—3 of Fig. 2;

Fig. 4 is a cross-sectional view on the line 4—4 of Fig. 1;

Fig. 5 is a cross-sectional view on the line 5—5 of Fig. 1;

Fig. 6 is a cross-sectional view on the line 6—6 of Fig. 2;

Fig. 7 is a cross-sectional view on the line 7—7 of Fig. 1;

Fig. 8 is a perspective of the heel rest;

Fig. 9 is a longitudinal sectional view on the line 9—9 of Fig. 8; and

Fig. 10 is a cross-sectional view on the line 10—10 of Fig. 8.

As shown in the drawings, my present novel shoe has upper materials designated generally at 1, an insole 2, outsole 3, and heel 4. The shoe is preferably manufactured on the novel last described and illustrated in my said copending application Ser. No. 204,231, and the insole 2 and shoe upper materials 1 are assembled on and formed to fit said last. Due to the construction of the last, a pair of pockets 5 and 6 are formed on a diagonal line across the inner shoe bottom, into which pockets the inner and outer balls of the foot drop. This positioning of the balls of the foot eases the vamp line at the throat of the shoe, and allows an easy and natural break between the toe and ball of the foot. A raised portion 7 is formed on the insole of the shoe, created by a depression in the last between the apexes representing the inner and outer balls of the foot, and this surface acts as a metatarsal arch support. This arch support is accentuated and maintained by the use of a shank stiffener 8 having an arched portion 9 adapted to fit under the raised portion 7 to maintain same constantly in raised position. This arch stiffener 8 terminates at the raised portion, and does not interfere with the flexibility of the fore part of the shoe. Suitable shoe bottom filler 10 is applied around the shank stiffener 8 and in the depression at the fore part caused by the upper materials 1 and welt 11, as well as at the heel portion at the rear of the shank stiffener 8. The outsole 4 is united to the welt 11 by through and through stitching 12, the upper materials 1 and welt 11 being united by usual stitching 13.

The inside or longitudinal arch 14 of the shoe is formed quite deep, particularly just in back of the ball of the foot, as at 15, and extends substantially to the rear of the heel. This results in a long and natural support for the entire longitudinal arch of the foot, the shank stiffener 8 giving the necessary under support to this arch of the foot.

The shoe is formed wide at the portion 16 which accommodates the cuboid bone of the foot, allowing the foot to rest in a broad depression and allowing the high inside curve to force the longitudinal arch into a curved position, where it will be maintained due to the special and scientific construction of the present shoe. Gaping of the sides and slippage at the heel will also be eliminated by this construction.

The inner tread width is designed in such a manner that it will comfortably contain the toes and balls of the foot while still presenting a neat and attractive appearance.

The roll on the toe, as shown at 17, is formed extremely full, so as to accommodate the toes of the wearer in a comfortable manner and without cramping or distortion. This roll extends forwardly to the position occupied by the great toe, where it recedes, this feature also adding to the attractive appearance of the shoe.

The back or heel curve 18 is pitched in such a manner that it will cause no chafing on the heel cord, and the entire heel will be seated uniformly without undue pressure on any one place or part.

An important feature of the present shoe is the deeply cupped heel seat and novel heel rest. As will be noted at 19 the heel seat cup is greatly accentuated, being formed on the last with this deep cup. In this manner room is provided for my novel heel rest, clearly illustrated in Figs. 8, 9 and 10, and which adds greatly to the comfort and the orthopedic qualities of this novel shoe.

This heel rest comprises a cushioning member 20, preferably of sponge rubber, and being convex on each surface. The cushion tapers down toward the front or breast portion 21 so that it will not extend beyond the cup of the heel seat to any appreciable extent. Over the cushion 20 is placed a layer 22 of any suitable or desirable material, preferably cork, which is secured or adheres to the cushion 20 by suitable adhesive. To the cork layer 22 is adhered a sock lining or layer 23, extending from the rear of the heel seat

to the forward part of the shank of the shoe, as is usual. The cork layer 22 serves as an insulating and moistureproofing material, and prevents the moisture or warmth from the wearer's foot from deteriorating or rotting the material of which the cushion 20 is composed. By having the heel rest so convex, the under side of the same will fit in the deep heel cup provided therefor, and the upper surface will retain its convex or rounded shape until the weight of the wearer is exerted thereon, whereupon the cushion or sponge rubber 20 will permit the heel rest to "give", and properly accommodate the heel of the wearer, distributing the weight equally over the heel seat, and providing a comfortable, resilient and satisfactory heel rest, by allowing the fleshy part of the heel to fill out the entire surface of the heel seat, and also permitting the heel to rest comfortably and in a normal position on the heel rest. This assures a positive and comfortable fitting heel.

Thus it will be apparent that the heel and ball-tread is so balanced that throwing of the foot into an abnormal position is eliminated, and it will be noted that the inner bottom of the shoe is shaped to conform to the anatomy of the foot.

My present novel shoe is so specially and scientifically designed and constructed as to keep the correct balance between the arch and the heel, which, it will be appreciated by those skilled in the art, will be a great relief to the heel and spine of the wearer.

The cushion 20, cork layer 22 and sock lining 23 are preferably united or adhered together prior to insertion or application in the shoe, and are therefore applied as a unit.

It will thus be seen that I have devised an extremely satisfactory and efficient shoe, embodying many distinct and advantageous features, so cooperating as to produce a healthful and comfortable shoe, and I have therefore claimed this shoe broadly herein.

While I have necessarily described my present invention somewhat in detail, it will be appreciated that I may vary the size, shape and arrangement of parts within reasonably wide limits without departing from the spirit of the invention.

My invention is further described and defined in the form of claims as follows:

1. The improved method of manufacturing boots and shoes, which consists in assembling upper materials and an insole on a last, forming a longitudinal instep arch in said upper materials extending from the ball of the toe portion to the rear of the heel, forming a pair of pockets on a diagonal line on the insole and raising the insole between said pockets to form a metatarsal arch support, applying an arch stiffener to said shoe with a portion of said stiffener engaging the raised portion of said insole to maintain the metatarsal arch support, applying suitable filler to the shoe bottom cavities, applying an outsole and completing the shoe.

2. The improved method of manufacturing boots and shoes, which consists in assembling upper materials and an insole on a last, forming a longitudinal instep arch in said upper materials extending from the ball of the toe portion to the rear of the heel, forming a pair of pockets on a diagonal line on the insole and raising the insole between said pockets to form a metatarsal arch support, pitching the heel curve of said shoe to a predetermined degree, forming the cuboid portion of said shoe with sufficient fullness to accommodate the outer longitudinal arch of the foot, providing a deeply cupped heel seat, providing a toe roll of increased fullness which terminates and recedes at the great toe, applying an arch stiffener to said shoe with a portion of said stiffener engaging the raised portion of said insole to maintain the metatarsal arch support, applying suitable filler to the shoe bottom cavities, applying an outsole and completing the shoe.

3. The improved method of manufacturing boots and shoes, which consists in assembling upper materials and an insole on a last, forming a longitudinal instep arch in said upper materials extending from the ball of the toe portion to the rear of the heel, forming a pair of pockets on a diagonal line on the insole and raising the insole between said pockets to form a metatarsal arch support, pitching the heel curve of said shoe to a predetermined degree, forming the cuboid portion of said shoe with sufficient fullness to accommodate the outer longitudinal arch of the foot, providing a deeply cupped heel seat, inserting a heel rest in said cup, said heel rest comprising a cushion convex on each side, a layer of insulating material, and a sock lining, providing a toe roll of increased fullness which terminates and recedes at the great toe, applying an arch stiffener to said shoe with a portion of said stiffener engaging the raised portion of said insole to maintain the metatarsal arch support, applying suitable filler to the shoe bottom cavities, applying an outsole and completing the shoe.

4. The improved method of manufacturing boots and shoes, which consists in assembling upper materials and an insole on a last, forming a longitudinal instep arch in said upper materials extending from the ball of the toe portion to the rear of the heel, forming a pair of pockets on a diagonal line on the insole, raising the insole between said pockets to form a metatarsal arch support, providing a deeply cupped heel seat, applying an arch stiffener to said shoe in such manner that a portion of said stiffener engages the raised portion of said insole to maintain the metatarsal arch support, applying an outsole and completing the shoe.

5. The improved method of manufacturing boots and shoes, which consists in assembling upper materials and an insole on a last, forming a longitudinal instep arch in said upper materials extending from the ball of the toe portion to the rear of the heel, forming a pair of pockets on a diagonal line on the insole, raising the insole between said pockets to form a metatarsal arch support, providing a toe roll of increased fullness which terminates and recedes at the great toe, applying an arch stiffener to said shoe in such manner that a portion of said stiffener engages the raised portion of said insole to maintain the metatarsal arch support, applying an outsole and completing the shoe.

6. The improved method of manufacturing boots and shoes, which consists in assembling upper materials and an insole on a last, forming a longitudinal instep arch in said upper materials extending from the ball of the toe portion to the rear of the heel, forming a pair of pockets on a diagonal line on the insole, raising the insole between said pockets to form a metatarsal arch support, providing a toe roll of increased fullness which terminates and recedes at the great toe, providing a deeply cupped heel seat, applying an arch stiffener to said shoe in such manner that a portion of said stiffener engages the raised portion of said insole to maintain the metatarsal arch support, applying an outsole and completing the shoe.

7. The improved method of manufacturing boots and shoes, which consists in assembling upper materials and an insole on a last, forming a longitudinal instep arch in said upper materials extending from the ball of the toe portion to the rear of the heel, forming a pair of pockets on a diagonal line on the insole, raising the insole between said pockets to form a metatarsal arch support, providing a toe roll of increased fullness which terminates and recedes at the great toe, providing a deeply cupped heel seat, applying an arch stiffener to said shoe in such manner that a portion of said stiffener engages the raised portion of said insole to maintain the metatarsal arch support, applying an outsole, and positioning a heel rest in said deeply cupped heel seat in such manner that the said heel rest will fill the concavity of the heel seat and provide a convex heel engaging surface.

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

PAUL C. WOLFER.