

M. W. WHITE.  
RUBBER SOLE SHOE.  
APPLICATION FILED JULY 11, 1916.

1,215,450.

Patented Feb. 13, 1917.  
2 SHEETS—SHEET 1.

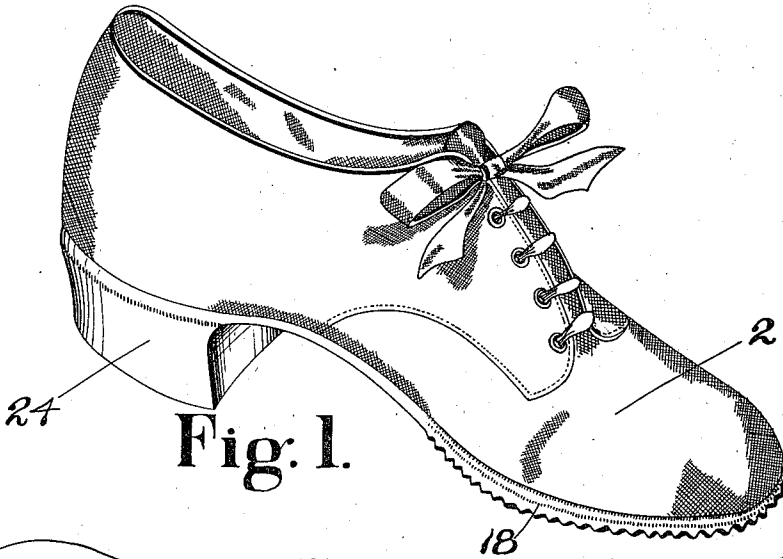


Fig. 1.

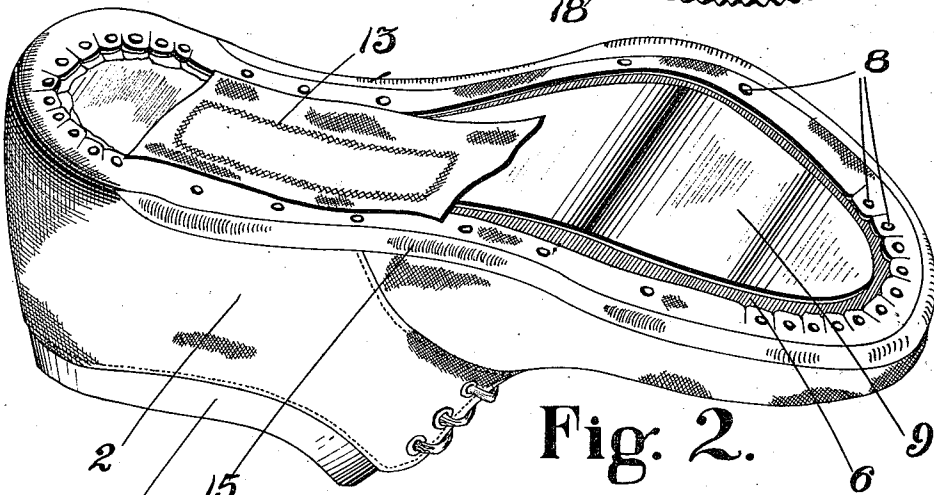


Fig. 2.

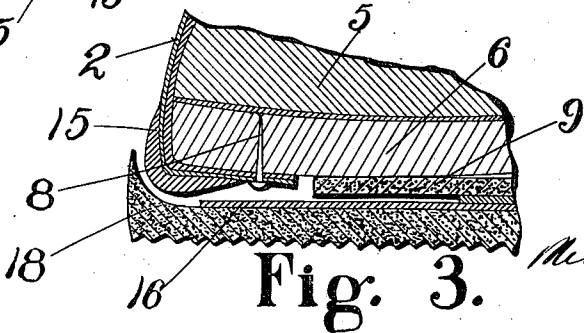


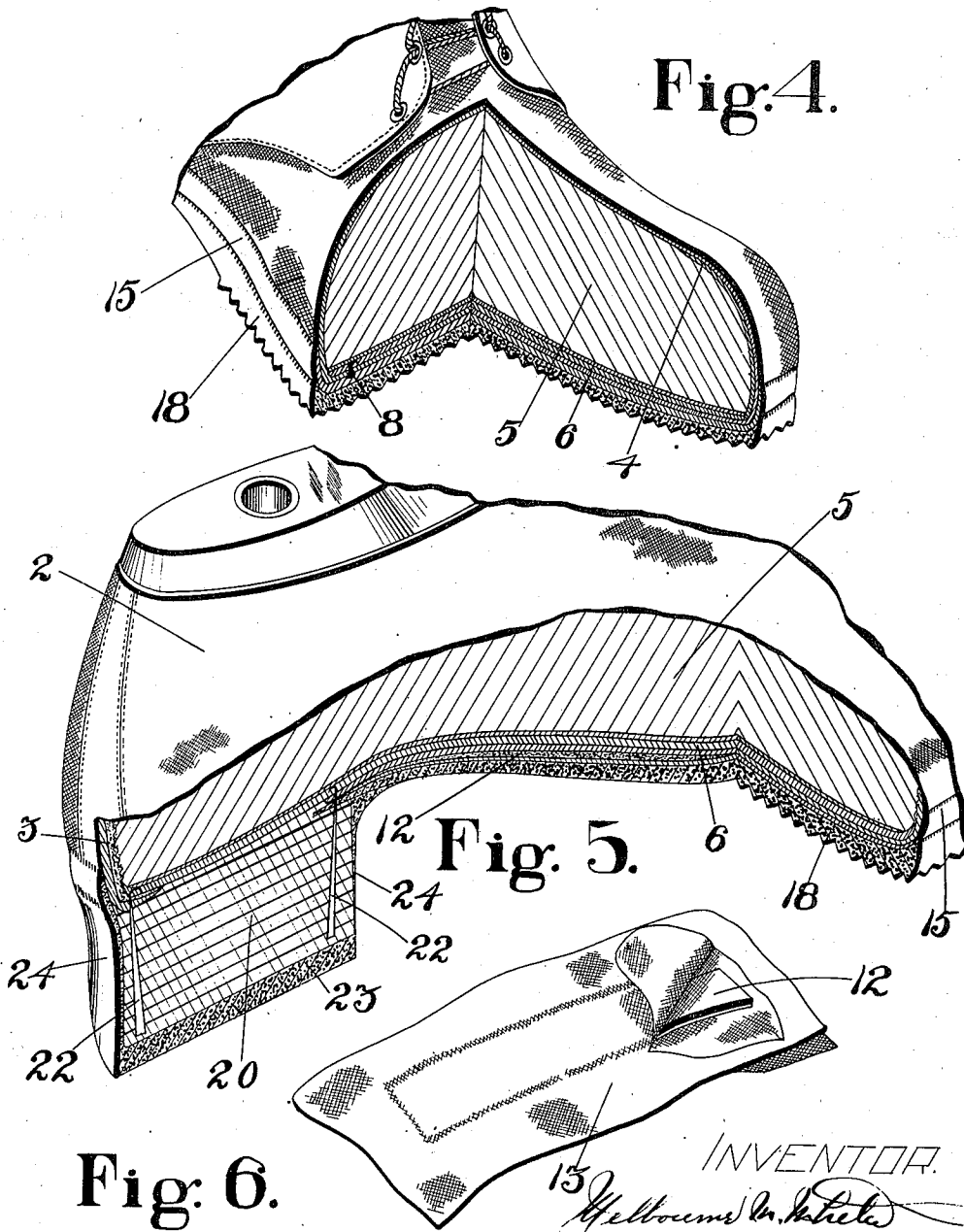
Fig. 3.

INVENTOR  
*M. W. White*

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# UNITED STATES PATENT OFFICE.

MELBOURNE W. WHITE, OF CLIFTONDALE, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

## RUBBER-SOLE SHOE.

1,215,450.

Specification of Letters Patent. Patented Feb. 13, 1917.

Original application filed March 24, 1915, Serial No. 16,718. Divided and this application filed July 11, 1916. Serial No. 108,686.

*To all whom it may concern:*

Be it known that I, MELBOURNE W. WHITE, a citizen of the United States, residing at Cliftondale, in the county of Essex and State of Massachusetts, have invented certain Improvements in Rubber-Sole 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.

This invention relates to rubber sole shoes and particularly to rubber sole shoes of the type which have an outer sole of rubber composition vulcanized to the upper of the shoe.

The demand for an inexpensive and serviceable shoe particularly adapted for summer wear has led to the extended use of shoes having a canvas or fabric upper and a rubber composition outersole vulcanized to the fabric upper. Up to the present time, however, rubber sole shoes of this type have not proven entirely satisfactory chiefly for the reason that it has heretofore been necessary to employ innersoles of vulcanizable rubber composition in the manufacture of the shoes, which innersoles not only render the shoes exceedingly uncomfortable and injurious to the feet but also add appreciably to the weight of the shoes. Also, such shoes are relatively shapeless and lack the neat and stylish appearance desired in a shoe of this kind. This is due largely to the fact that it is impractical to tension and shape the upper about the form of the last with the fingers and then to secure the upper in its tensioned condition to the rubber composition innersole by cement.

The present invention has for its principal objects to provide a novel rubber sole shoe from which the objectionable features above discussed have been eliminated and to provide a comfortable and neat appearing rubber sole shoe which may be produced at little, if any, increase in cost over the present shoes of this type.

With these ends in view the rubber sole shoe of the present invention is provided with a fiber innersole and the canvas or fabric upper is secured while under tension to the fiber inner sole. According to a further feature of the invention the rubber sole shoe may also, for the first time in the art, be

provided with a fiber heel attached to the innersole and also a fiber counter.

Other objects and features of the invention will be apparent from the following description when read in connection with the accompanying drawings and the novel features will be set forth in the appended claims.

In the drawings,

Figure 1 is a perspective view of a completed shoe made in accordance with this invention;

Fig. 2 shows the shoe after lasting but before the application of the sole and heel;

Fig. 3 is an enlarged sectional detail illustrating the relative positions of the various bottoming materials of the shoe.

Fig. 4 is a section through the toe of the shoe on an enlarged scale;

Fig. 5 is a section through the shank and heel portions of the shoe on a similar scale to Fig. 3; and

Fig. 6 is a perspective view of a preferred form of shank stiffener ready for application to the shoe.

The preferred method of making one form of rubber sole shoes embodying the present invention is disclosed and fully described in my co-pending application Serial No. 16,718 filed March 24, 1915 of which the present application is a division.

One manner in which the rubber sole shoe of the present invention has been successfully made consists in first providing a shoe upper 2 of leather, canvas or other fabric with a fiber counter or heel stiffener 3 of suitable shape inserted between the upper and lining in the usual manner. The toe portion of the shoe upper is also preferably given permanence of shape by stiffening the upper either with materials applied in liquid form to the upper or by an inserted toe stiffener 4, Fig. 4. This upper is then assembled upon a last 5 which is of metal, preferably aluminum alloy, together with an innersole 6 of fibrous material, which may be leather or any of the fibrous substitutes for leather. The term "fibrous innersole" will hereinafter be used to designate generally an innersole of any fibrous material. In practising the process I have successfully used an innersole composed of a vegetable fiber made according to the sulfite process,

which I have found will successfully withstand without injurious effects the high degree of heat required to vulcanize the outersole to the shoe.

5 The assembled shoe is now lasted, as shown in Fig. 2, preferably on the hand method type of lasting machine which stretches and shapes the upper to the contour of the last the same as a McKay or welt shoe is shaped and permanently secures the tensioned upper to the innersole by lasting tacks 8 driven through the marginal edge of the lasted upper and the innersole and clenched on the bottom of the metal last. 10 The bottom of the shoe, after it has been lasted, is then made level for the reception and even support of the outersole by filling the space within the overlapped edge of the upper with a vulcanizable composition or filler 9. When the shoe is to be provided with a heel, a shank stiffener is preferably employed, and a novel arrangement is adopted in this respect as well as in the means for securing the shank stiffener in position on the shoe. To cause the stiffener to be securely attached to the vulcanizable bottoming materials, the stiffening element 12, which is preferably of spring metal, is first placed between sheets or folds 13 of friction fabric as shown in Fig. 6, thus providing the stiffening element with attaching fins on both sides and preferably one end. The stiffener so constituted is placed on the filler 9 with its rear end on the heel seat, or in the rear of the location for the breast of the heel and after the outersole has been applied the stiffener is securely vulcanized in place, becoming practically a part of the filler and outersole which make a cushion above and below it and produces a strong and yet exceedingly comfortable construction for the shoe. A vulcanizable strip 15 of high grade rubber called "foxing" is then applied around the side of the shoe near the edge and is lapped in over the lasted-in margin of the upper on the shoe bottom. A "binder" of friction fabric 16 is now applied to the bottom of the shoe, the binder overlapping the inner margin of the foxing. 50 The outersole 18, died out from a sheet of calendered rubber or rubber-like composition, is then applied to the shoe bottom and after being accurately placed to extend over the margin of the rubber foxing to the edge of the shoe, is forced firmly against the shoe bottom as by rolling pressure to conform it to the contour of the bottom of the last.

If the shoe is to have a heel, as herein shown in Figs. 1 and 5, the formed heel 20 which may or may not be of vulcanizable material may now be attached. Preferably the heel consists of fiber stock, such for example as that employed for the innersole, and is fastened to the shoe by heel attaching nails 22 extending through the heel and

the heel seat portion of the innersole and clenched upon the metallic bottom of the last. Preferably the sole does not extend to the rear end of the shoe but terminates a short distance back of the breast line, thus saving the expensive sole stock. Also a better foundation is offered for the attachment of the heel. The heel is preferably provided with a rubber toplift 23. After the heel has been attached it is covered with a sheet of rubber 24 which will preferably lap over the edge of the heel and extend for a short distance over the adjacent portion of the upper so as to constitute around the counter portion of the shoe substantially a continuation of the foxing 15. This covering 24 adheres to the underlying surfaces of the heel and upper and when vulcanized it becomes permanently attached to said surfaces and constitutes a water-excluding envelop having an appearance uniform with the outersole and the foxing. For some classes of shoes the rubber covering may be omitted and in that case the shoe may, if desired, be vulcanized before the heel is applied and the heel then nailed on as in the manufacture of all leather shoes.

The shoe is now placed in a vulcanizing apparatus where it remains from 12 to 24 hours at a temperature of from 200 to 300 degrees F. during which time the rubber and rubber-like composition are thoroughly cured and vulcanized. During this step in the process all of the vulcanizable portions of the shoe including the outersole and the foxing form a substantially integral body and become permanently attached to the overlapped margin of the upper, the heads of the lasting tacks, the shank stiffener and the filler.

The rubber soled shoes produced by the herein described process are far superior to sneakers in both appearance and fit and they are more comfortable, particularly for summer wear, since the fiber innersole provides an effective insulation or protection for the wearer's feet from the drawing and sweating action of a rubber-composition innersole material such as heretofore used. Moreover, the expense involved in the manufacture of the shoes of this invention is substantially no greater than the cost of manufacturing sneakers. The difference in this respect is indicated by the fact that the uppers for the shoes of this invention are cut a size smaller than the uppers which are lasted by hand thereby effecting a saving in upper stock which is equal to the cost of the lasting and tacking operation.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A rubber sole shoe comprising, a fiber innersole, an upper lasted over on the innersole and secured while under tension to the

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innersole by metallic fastenings, and an outersole of rubber composition united to the upper and the innersole by vulcanization.

2. A rubber sole shoe comprising, a fiber innersole, a fabric upper lasted over on the innersole and secured while under tension to the innersole by metallic fastenings, an outersole of rubber composition united to the upper and innersole by vulcanization, and a fiber heel attached to the shoe by metallic fastenings.

3. A rubber sole shoe comprising, a fiber innersole, a fabric upper lasted over on the innersole and secured while under tension to the innersole by metallic fastenings, a filler of vulcanizable material vulcanized to the innersole, a binder of friction fabric covering the filler and overlapping the overlapped edge of the upper to present a substantially uninterrupted outer sole receiving surface, and an outersole of rubber composition united to the upper and the innersole by vulcanization.

4. A rubber sole shoe comprising, a fiber innersole, a fabric upper lasted over on the innersole and secured to the innersole while under tension, a fiber heel located on the heel seat and attached to the innersole by metallic fastenings, and an outersole of rubber composition covering the shoe bottom forward of the heel and united to the innersole and the upper by vulcanization.

5. A rubber sole shoe comprising a fiber innersole, a fabric upper lasted over on the innersole and secured while under tension to the innersole by metallic fastenings, a shank stiffener extending from the heel seat to the ball portion of the shoe, a fiber heel located on the heel seat and extending over

the rear end of the shank stiffener, metallic fastenings attaching the heel to the innersole, and an outersole of rubber composition covering the shoe bottom forward of the heel and united to the innersole and the upper by vulcanization.

6. A rubber sole shoe comprising a fiber innersole, an upper having a fiber counter and a toe stiffener and lasted over on the innersole and secured while under tension to the innersole by metallic fastenings, a shank stiffener extending from the heel seat to the ball portion of the shoe, an outersole of rubber composition united to the upper and the innersole by vulcanization, and a fiber heel located on the heel seat and attached to the shoe by metallic fastenings.

7. A rubber sole shoe comprising a fiber innersole, a fabric upper having a fiber counter and a toe stiffener, said upper being lasted over on the innersole and secured while under tension to the innersole by metallic fastenings, a filler of vulcanizable material vulcanized to the innersole, a shank stiffener extending from the heel seat to the ball portion of the shoe, a foxing extending around the side of the shoe adjacent the lower edge and overlapping on to the bottom of the shoe, a fiber heel located on the heel seat and extending over the rear end of the shank stiffener, metallic fastenings attaching the heel to the innersole, and an outersole of rubber composition covering the bottom of the shoe forward of the heel, the outersole, the foxing and the filler being united together and to the innersole by vulcanization.

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

MELBOURNE W. WHITE.