Nov. 19, 1940. C. C. ANDREASEN 2,222,391

SHOE

Filed Sept. 6, 1938

Fig. 2.

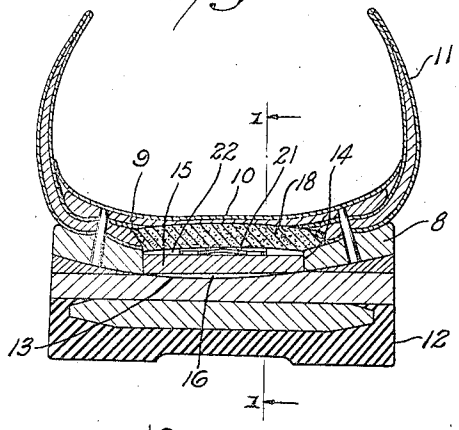
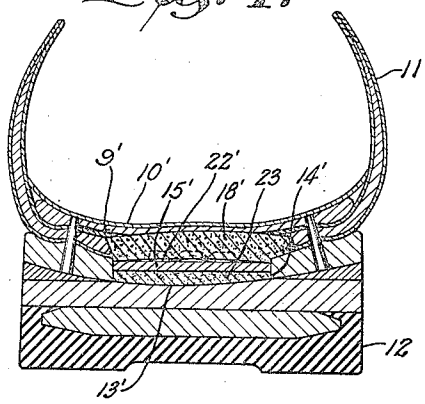


Fig. 7.



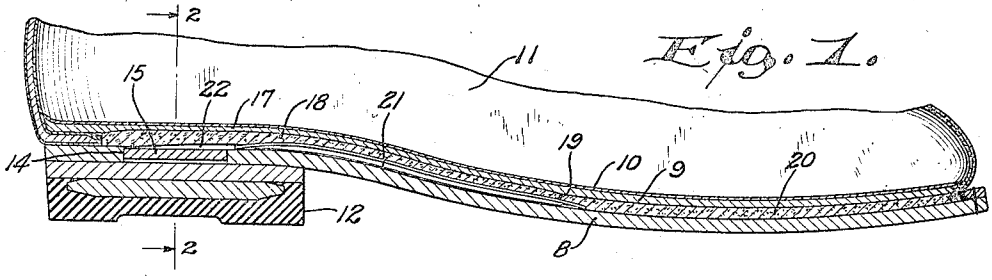


Fig. 1.

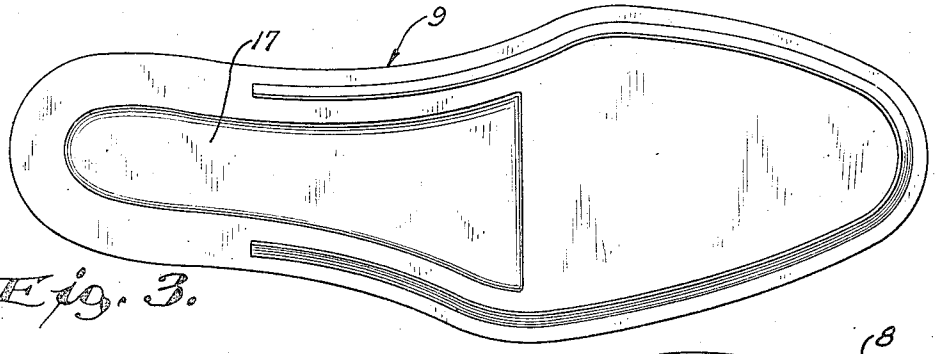


Fig. 3.

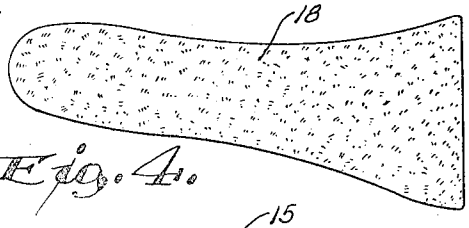


Fig. 4.

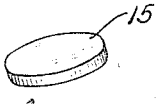


Fig. 6.

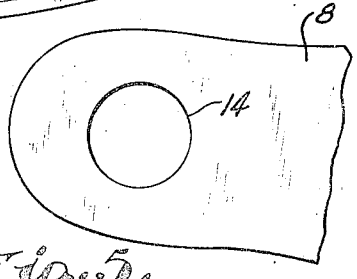


Fig. 5.

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SHOE

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Application September 6, 1938, Serial No. 228,571

5 Claims. (Cl. 36—28)

This invention relates to improvements in shoes.

Heretofore, various forms of shoes have been proposed and manufactured embodying means for cushioning the heel of the wearer. The present invention relates to a shoe of this general type and includes a principle of construction wherein the cushioning is accomplished by a novel combination of elements.

It is therefore a general object of the invention to provide in a shoe, means forming a yielding support for the calcaneum or heel bone of the wearer whereby shocks incident to walking will be absorbed to increase the user's comfort.

A more specific object of the invention is to provide in a shoe having an outsole formed with an aperture beneath the heel bone, means in said aperture producing a flexing action during walking.

A further object of the invention is to provide in a construction as above described air pockets above and below said flexing member.

A still further object of the invention is to provide in a shoe as above described a cushioning member above said aperture and flexing member whereby the heel bone is cushioned by the combined effects of said cushioning member and said flexing member, the latter moving into and out of air pockets.

A further object of the invention is to provide a shoe as above described wherein the cushioning member extends from the heel forwardly beneath the arched portion of the shoe and wherein the lower surface of the insole is skived to provide a recess for cooperation with said cushioning member.

A further object of the invention is to provide a cushion shoe which is relatively inexpensive to manufacture, which is neat in appearance, and which is well adapted for the purpose described.

With the above and other objects in view the invention consists of the improved shoe in all its parts and combinations as set forth in the claims and all equivalents thereof.

In the accompanying drawing illustrating preferred embodiments of the construction wherein the same reference numerals designate the same parts in all of the views,

Fig. 1 is a longitudinal sectional view through the lower portion of a shoe, part of the upper being broken away;

Fig. 2 is a sectional view taken along line 2—2 of Fig. 1;

Fig. 3 is a plan view of the lower surface of the insole;

Fig. 4 is a plan view of the resilient cushioning member;

Fig. 5 is a fragmentary plan view showing the upper side of the outsole above the heel;

Fig. 6 is a perspective view of the flexing member or plug; and

Fig. 7 is a view similar to Fig. 2 illustrating a modified form of the invention.

Referring more particularly to the drawing, the numeral 8 designates an outsole, the numeral 9 an insole, the numeral 10 a lining for the insole, the numeral 11 the upper, and the numeral 12 the heel. The heel 12 has its upper surface transversely concaved as at 13, in accordance with the usual practice, and the heel is secured to the lower surface of the rear of the outsole, by any of the well known methods, the rear of the outsole being shaped to conform to the concavity on the upper surface of the heel as clearly shown in Fig. 2.

Directly above the heel the outsole is provided with an opening 14 which opening preferably extends entirely through said outsole (see Figs. 1, 2 and 5). The piece of leather which is removed in forming the opening 14 is substantially reduced in thickness and then replaced in the opening to form a plug or flexing member 15. It is to be noted that this plug normally assumes a straight condition as shown in Fig. 2 to span a portion of the concavity 13 on the upper surface of the heel (see Fig. 2) leaving an air pocket 16 below the plug. This plug may be formed of any relatively rigid material capable of flexing under pressure and then returning to normal condition when the pressure is removed. The type of leather used in outsoles, however, is well adapted for this purpose and is convenient and economical to use because the piece cut from the opening would otherwise be wasted.

The lower surface of the insole 9 is skived as at 17 to provide an elongated concavity or recess as shown in Figs. 1 and 3 and in said recess a piece of cork or rubber composition material forming a cushioning member 18 is employed. Said cushioning member is located between the insole and outsole as shown in Fig. 1 and has its upper surface bulging into the skived out portion 17 of the insole. The rear end of the cushioning member extends over the opening 14 in the outsole and over the plug 15 in said opening. The forward portion of the cushioning member may extend forwardly beneath the arched portion of the shoe to terminate at the point 19. From the

point 19 forwardly there may be an additional piece of rubber and cork composition material 20 serving as a filler between the forward portions of the insole and outsole. Any other type of filler may be employed in lieu of the filler 20. Located between the cushioning member 18 and the outsole is the usual metal shank stiffener 21 and the rear end of said shank stiffener may terminate just short of the opening 14 in the outsole or may project slightly into said opening. The shank stiffener serves to press the cushioning member 18 upwardly into the skived out part 17 of the insole, and in view of the fact that the plug or flexing member 15 is of less thickness than the thickness of the outsole there is normally an air pocket 22 between the upper surface of the plug 15 and the lower surface of the cushioning member 18. This air pocket is in addition to the air pocket 16 below the plug and heretofore described.

In use, when the weight of the wearer is placed upon the heel, the skived out portion of the insole over the outsole opening 14 will tend to flex downwardly to force a portion of the cushion 18 into the opening 14. This may temporarily close the air space 22 and will cause the plug 15 to flex from its straight position of Fig. 2 to a concaved position conforming to the concavity 13 on the upper surface of the heel. This will also temporarily close the air space 16. When the pressure is removed the parts will return to the normal position of Fig. 2. Thus during walking the heel bone of the user will be cushioned by said flexing action. The use of the leather plug 15 in the opening 14 prevents the cushioning material thereabove from becoming permanently deformed into said opening to produce too great a depression at the heel, and the use of said plug 15 instead of a rubber plug entirely filling the opening 14 makes possible a flexing action as the plug flexes from straight condition to concave condition, as distinguished from an ordinary yielding cushion action, which latter may result in too pronounced a pocket at the heel.

In the form of the invention shown in Fig. 7 the construction is identical except that the plug 15' is made somewhat thinner than the plug 15 of Fig. 2 to permit the use of an auxiliary or second cushion 23 within the opening 14' below the plug 15'. The cushion 23 performs the same function as the air pocket 16 in Fig. 2 permitting the flexing member 15' to flex downwardly against the cushion 23. All other parts of the construction of Fig. 7 are similar to those heretofore described in connection with the principal form of the invention and are indicated by primed numerals corresponding to the numerals used in describing the principal form.

From the above it is apparent that an improved structure is provided wherein the heel bone is cushioned by the combined effects of the cushioning member 18, and the flexing member 15 or 15', the latter being cooperable with air pockets 16 and 22, either with or without the auxiliary cushion 23 shown in Fig. 7. It is also apparent that the use of the flexing plug 15 or 15' formed of relatively rigid material such as leather tends to maintain the heel of the shoe in its proper condition as purchased, whereas if the opening 15 were filled with rubber material as has heretofore been proposed, there is too little firmness beneath the heel with the result that too deep a pocket may eventually be formed for the heel bone.

In the claims the expression "relatively rigid material" is intended to comprehend material such as leather having a natural rigidity but capable of flexing under pressure, as distinguished from a cushioning material having no natural rigidity.

It is further apparent that a recess in the outsole, corresponding to the opening 14, which does not extend entirely through the outsole, fitted with a flexing plug of less thickness than the recess will accomplish a similar purpose and applicant does not intend to limit his invention to a construction wherein the opening 14 extends entirely through the outsole.

Various other changes and modifications may be made without departing from the spirit of the invention and all of such changes are contemplated as may come within the scope of the claims.

I claim:

1. In a shoe having an insole, outsole, and heel, said outsole having an opening therein above said heel, a plug of relatively rigid material inserted in said opening, and a cushioning member between the insole and outsole over said opening, said plug being of less thickness than the normal thickness of the space between the bottom of the cushioning member and the bottom of the opening, said cushioning member being resiliently movable into and out of the opening above the plug during use of the shoe to cause movement of the plug and there being means providing for resilient downward movement of the plug in response to said movement of the cushioning member.

2. In a shoe having an insole, outsole, and heel, said heel having a transversely concaved upper surface in contact with the outsole and said outsole having an opening above said heel, a plug inserted in said opening and below the insole and normally assuming a straight position to span a concaved portion of the heel leaving a space above said spanned concaved portion, said plug being formed of relatively rigid material capable of flexing into and out of concaved condition when pressure is applied thereto during use, and a cushioning member between said insole and outsole over said opening and plug.

3. In a shoe having an insole, outsole, and heel, said heel having a transversely concaved upper surface in contact with the outsole and said outsole having an opening above said heel, a plug inserted in said opening and below the insole and normally assuming a straight position to span a concaved portion of the heel leaving a space above said spanned concaved portion, said plug being formed of relatively rigid material capable of flexing into and out of concaved condition when pressure is applied thereto during use, and a cushioning member between said insole and outsole over said opening and plug, said plug being of less thickness than the normal thickness between the bottom of the cushioning member and the bottom of the opening.

4. In a shoe having an insole, outsole, and heel, said outsole having an opening therein above said heel, a plug of relatively rigid material inserted in said opening, and a cushioning member between the insole and outsole over said opening, said plug being of less thickness than the normal thickness of the space between the bottom of the cushioning member and the bottom of the opening, and a shank stiffener between said cushioning member and outsole normally maintaining a part of said cushioning member spaced above said plug, a portion of said cushioning member

being resiliently movable into and out of the outsole opening during use of the shoe to cause movement of the plug.

5. In a shoe having an insole, outsole, and heel, said outsole having an opening therein above said heel, a plug of relatively rigid material inserted in said opening, and a cushioning member between the insole and outsole over said opening, said plug being of less thickness than the normal thickness of the space between the bottom of the cushioning member and the bottom of the opening, and a shank stiffener between said cushioning member and outsole normally maintaining a part over said cushioning member spaced above said plug, a portion of said cushioning member being resiliently movable into and out of the outsole opening during use of the shoe to cause movement of the plug, the lower surface of the insole being skived to provide a recess for cooperation with said cushioning member.

CARL C. ANDREASEN.