This invention relates to footwear and more particularly refers to improvements in treads for boots, shoes, and the like, calculated to increase both the gripping and cushioning properties of footwear generally.

The primary object of this invention is to provide a combination of resilient sole and heel elements for footwear, insuring a maximum degree of comfort to the wearer, by providing effective cushioning and preventing the overheating of the foot often engendered by direct contact of the sole of the shoe with a hot pavement, or cold.

Another object is to provide a combination of resilient sole and heel elements for footwear, so constructed as to afford an excellent grip on slippery pavements and a good bearing surface at all times in the form of a peripheral cushioning edge located directly under the edge of the sole and heel of a shoe.

A further object is to provide a combination of resilient sole and heel elements for footwear, made in detachable form, each element having means for quickly and securely fastening it onto the sole or heel of the shoe, as the case may be, and being provided with a peripheral edge imparting to the shoe the desired cushioning and gripping qualities.

A still further object is to provide a combination of resilient sole and heel elements for footwear, made in readily attachable and detachable form, adapted to protect the underside of a shoe against direct contact with wet pavements and also adapted to increase the useful life of the shoe itself.

Other objects and advantages of the present invention will more fully appear as the description proceeds and will be set forth and claimed in the appended claims.

My invention is illustrated by way of example in the accompanying drawings in which:

Fig. 1 is a view in perspective showing the underside of a shoe equipped with detachable sole and heel elements embodying my invention;

Fig. 2 is a view in perspective of the sole element shown in Fig. 1;

Fig. 3 is a view in perspective of the heel element shown in Fig. 1;

Fig. 4 is a fragmentary sectional view in perspective of the sole element shown in Fig. 2 in an enlarged scale;

Fig. 5 is a fragmentary longitudinal vertical section through the toe end of the same;

Fig. 6 is a view in perspective showing the underside of a woman's shoe equipped with a heel and sole elements embodying my invention in a different form;

Fig. 7 is a vertical longitudinal view in an enlarged scale through the heel element shown in Fig. 6; and

Fig. 8 is a fragmentary sectional perspective view of part of the sole element shown in Fig. 6.

In Figs. 1 to 5, 10 designates a shoe equipped with my improved sole element 11 and heel element 12. The sole element comprises a web portion 13 constituting sole proper, having an outline substantially identical with the outline of the sole of the shoe, and a peripheral cushioning rib 14 integral therewith downwardly projecting from said auxiliary sole portion, said rib being preferably perforated throughout its length as shown at 15 and virtually forming a horseshoe support for the sole of the shoe.

In view of the fact that the cushioning rib is the only part of the element that comes into contact with the ground, and is therefore subject to wear, the longitudinal perforation 15 is preferably located closer to the top of the auxiliary sole portion 13 than to the lower surface of the cushioning rib, thus causing the lower part 16 of the cushioning rib to be thicker than the sides thereof.

The sole element described is preferably made of a good quality of rubber and can be detachably secured onto the shoe by means of a toe hook member 17 and two rear hook members 18, 20, adapted to firmly engage the rim of the sole of the shoe, as clearly shown in Fig. 5. To this end, each hook member has a part embedded into the body of the element and a hook portion upwardly and inwardly extending therefrom, said hook portion terminating in a downwardly bent tip end 18 adapted to bite into the top of the sole edge and to prevent the hook member from working loose.

It will be understood that, since the sole element itself is made of rubber, when the hook members are caused to engage the edge of the sole of the shoe, they have to be pulled outwardly to a certain extent stretching the rubber to which they are attached, so that when they are finally fastened into place, the stretched rubber will exert a tension against them causing their grip to be firm and secure. The sole element can easily be removed merely by reversing the operation.

The heel element consists of a similar structure comprising a web portion 21 having an outline corresponding to that of the underside of the heel, and a cushioning rib or peripheral portion 21', integral therewith and depending therefrom. Like in the sole element, the cushioning rib 21 may be longitudinally perforated as shown in Fig. 1 in order to provide a better cushioning effect, but if preferred, in view of the fact that the heel of a shoe is more subject to wear than the sole, the rib portion of the heel element can be made solid and still provide an excellent cushioning effect.

3 Claims.

(Cl. 36—7.5)
Like the sole element, the heel element is provided with three gripping hook members, one at the rear and one at each side at the front shown at 23, 24, said hook members being longer than those provided in the sole element, due to the greater height of the heel, otherwise the operation of securing the heel element in position and removing it therefrom is similar to that described in connection with the sole element.

If desired, the heel element may also be provided with a front stop although in the majority of cases such an addition will not be necessary.

In Figs. 6, 7, 8, I show my improved combination of sole and heel element attached to a woman's shoe 26. The usual shape of the heel in a woman's shoe makes it impractical to use the gripping hooks as shown in Figs. 1 and 3 for securing the heel element in position.

Therefore, I prefer to make the web portion of the heel element integral with a reversible skirt portion adapted to tightly embrace the heel or rear part of the boot, as shown in full lines in Fig. 6 and in full lines in Fig. 7, said skirt portion being reversible to the position shown in dotted and dash lines at 27' for the purpose of inserting the heel element in position or removing it therefrom.

The heel element in this case is shown formed integral with a cushioning rib 31 having a solid section in order to illustrate the statement previously made in this connection. A solid cushioning rib, can of course, also be employed in the sole element if desired, as shown in Figs. 6 and 8 where 38' designates the web or auxiliary sole portion proper and 31' designates the solid cushioning rib.

In order to break the continuity of contact between the web portion of the sole element and the sole of the shoe, so as to prevent the possibility of discomfort to the wearer from overheating of the underside of the foot, I prefer to form the upper surface of the auxiliary sole portion with grooves or indentations as shown at 32, permitting the passage of air between the sole of the shoe and the auxiliary sole portion. If preferred, the upper portion of the sole element can be perforated instead of or besides being provided with air passages for cooling purposes. It will be readily seen that the location of the cushioning rib portions at or near the very edge of the underside of the shoe will cause the same to provide practically as broad and firm a support for the wearer as the shoe itself.

Furthermore, the resulting relatively high uniaxial pressure against the underside of the cushioning ribs will cause the shoe to have better ground gripping qualities than if the entire sole of the shoe were in contact with the ground. In addition to this, the rib portions provide a very effective cushioning action adding very materially to the comfort of the wearer and to the lightness of his step.

The peripheral location of the cushioning rib portions is also advantageous from a standpoint of appearance since when the two elements of the combination are attached onto a shoe, no unusual or objectionable change can be detected except that the sole of the shoe will appear somewhat heavier than normal.

When one or both of the cushioning ribs are perforated and open at the inner ends, the cushioning effect is enhanced by the air escaping when the ribs are subjected to pressure and reentering when the foot is raised from the ground. However, if the material is rather light and "gives" easily, as is likely to be the case when the elements are made as unobtrusive as possible for the sake of appearance, it may be preferable to plug the ends of the cushioning ribs so that the air while enhancing the cushioning qualities of the same cannot escape and allow flattening of the rib.

It will be understood that my improved shoe attachment can be used to advantage in place of the ordinary rubber shoes in order to prevent direct contact of the shoe with the ground and can also be employed in order to save the shoe from wear, thus prolonging the useful life of the shoe itself.

The constructional details of my invention may vary to some extent from those shown without departing from the inventive idea. The drawing should therefore be understood as being intended for illustrative purpese to that of the portion of the under described elements in the scope of the appended claims.

I claim:

1. A device of the character described comprising sole and heel elements for a shoe or the like, each element comprising a web attaching portion having an outline substantially corresponding to that of the portion of the underside of the shoe to which it is to be attached, and a tubular cushioning rib portion integral with and depending from the edge of said web attaching portion, said rib portion having a substantially horseshoe contour and having an open end longitudinal perforation forming an open compressible air chamber serving as an air vent.

2. A device of the character described comprising auxiliary sole and heel elements for a shoe or the like, each element comprising a web attaching portion having an outline substantially corresponding to that of the portion of the underside of the shoe to which it is to be attached, and a tubular cushioning rib portion integral with and depending from the edge of said web attaching portion, said rib portion having a substantially horseshoe contour and having an open end longitudinal perforation forming an open compressible air chamber serving as an air vent, and means for detachably securing each element in position, said means comprising hook members upwardly extending from the edge of each element, adapted to engage and grip the upper edge surface of the base portion of the shoe.

3. A device of the character described comprising auxiliary sole and heel elements for a shoe or the like, each element comprising a web attaching portion having an outline substantially corresponding to that of the portion of the underside of the shoe to which it is to be attached, and a tubular cushioning rib portion integral with and depending from the edge of said web attaching portion, and means for detachably securing each element in position, the upper surface of the web portion of the sole element having open end grooves permitting the passage of air between said surface and the sole of the shoe.

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