

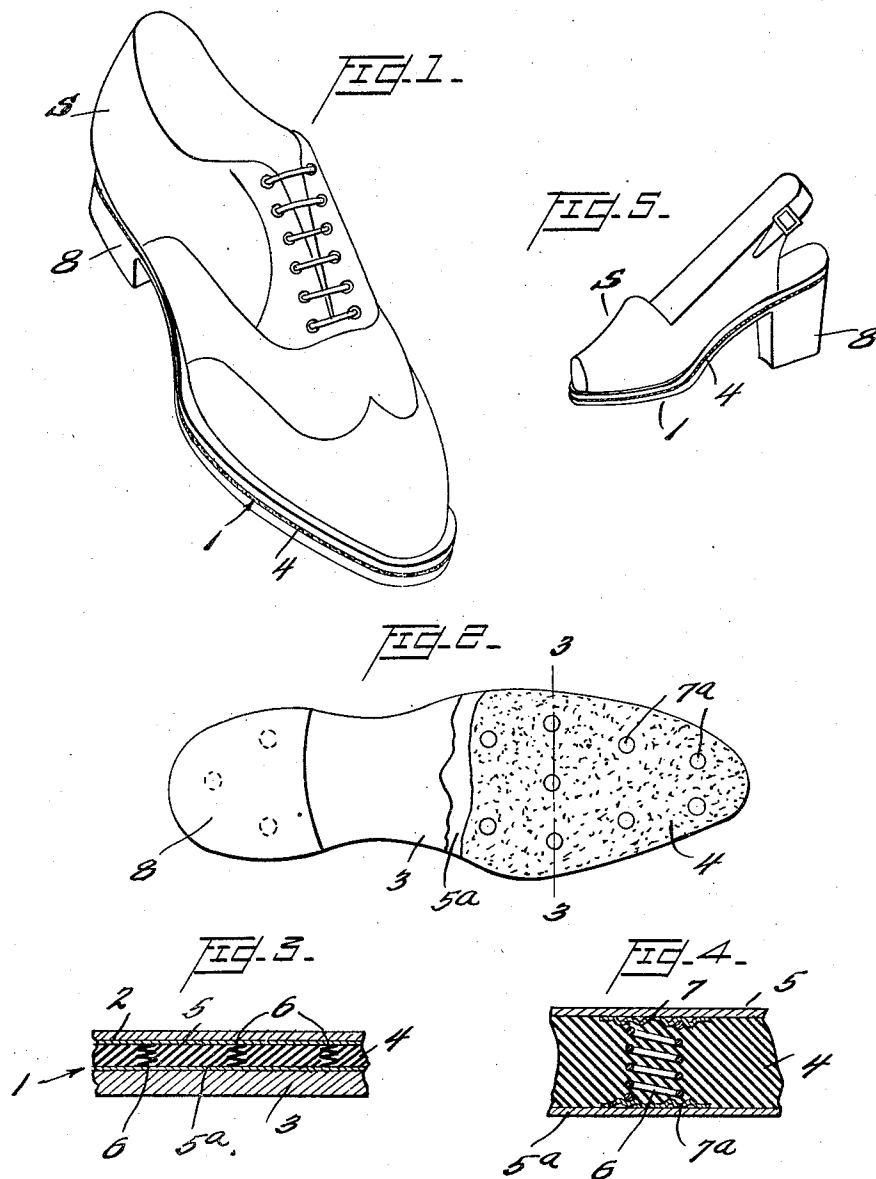
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M. HALL

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CUSHIONED SHOE SOLE

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CUSHIONED SHOE SOLE

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1 Claim. (Cl. 36—30)

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This invention relates to shoes having cushioned soles adapted to impart a spring to the step of the wearer as well as to reduce the transmission of shocks and jars to the body.

While it has heretofore been proposed to provide cushioning means for the soles of shoes embodying a layer of coil springs interposed between the inner soles and outer soles of the shoes, such means are objectionable for the reason that in use the outer sole tends to slip in a direction parallel to the inner sole, thus failing to afford a solid grip between the feet of the wearer and the ground. In those types of cushioned soles in which a layer of resilient material, such as soft rubber, has been employed in lieu of coil springs, the resilient material because of its lack of inherent strength is apt to rupture because of these shear stresses when used over a prolonged length of time, causing the outer sole to tear loose from the inner sole. Furthermore, the areas of the cushioning layer exposed to the greatest pressure from the foot tend to pack down after a short period of use imparting a hilly or uneven surface to the inner sole on the inside of the shoe.

In order to overcome the above objections, it is an important object of my invention to provide a shoe which while combining the advantages of cushioning layers of both coil springs and resilient material at the same time avoids the objection of such layers when employed separately.

Still another object of my invention is to provide a shoe having a cushioned sole comprising a layer of resilient material within which is incorporated a multitude of coil springs having a somewhat greater resistance to compression than the resilient material, the construction and arrangement being such that the coil springs provide the principal support for the outer sole while the surrounding body of resilient material prevents side slip between the inner and outer soles.

A further object of my invention is to provide a shoe sole comprising a cushioned layer comprising a multitude of coil springs molded within a resilient material, said layer being adapted to be die stamped or otherwise cut to the size of a shoe in generally the same manner as a leather sole blank.

Other objects and advantages will be apparent from the following detailed description of a preferred embodiment of the invention, reference being had to the annexed drawing in which:

Figure 1 is a perspective view of a man's shoe having a cushioned sole;

Figure 2 is a plan view of the bottom of the cushioned sole with the outer sole removed;

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Figure 3 is a transverse cross-sectional view of the cushioned sole taken on the line 3—3 of Fig. 2;

Figure 4 is a detail cross-sectional view through the cushioned sole showing the manner in which the coil springs are secured thereto; and

Figure 5 is a perspective view of a woman's high heeled shoe having a cushioned sole.

In Fig. 1 of the drawing is shown a man's shoe S of the conventional form to the bottom of which is attached a cushioned sole 1. The cushioned sole 1 comprises an inner sole 2 which may be secured to the shoe in the usual manner, an outer sole 3 and an intermediate cushioning layer 4.

The cushioning layer is composed of a resilient material, such as sponge rubber, having molded thereto top and bottom facing sheets 5 and 5a of hard rubber, rubber composition or other relatively stiffly flexible material. Inner sole 2 is sewed to hard rubber sheet 5 and outer sole 3 is sewed to hard rubber sheet 5a. Molded within the resilient material is a series of normally uncompressed coil springs 6 corresponding in location as shown in Fig. 2, so as to provide maximum support for the areas of the inner sole most subject to pressure from the foot. While I prefer to mold the springs in the sponge rubber, they may, if desired, be inserted in holes punched out of the sponge rubber and corresponding in size to substantially the diameter of the springs. Each of these springs is made of metal so as to be more resistant to compression than the surrounding body of sponge rubber and the upper and lower ends of the springs sit within circular channels formed in reinforcing disks 7 and 7a (preferably made of a suitable plastic) secured to the opposed surfaces of the facing sheets 5 and 5a. The outer sole 3 is cemented or otherwise securely affixed to the lower facing sheet 5a.

The cushioning layer may be manufactured independently of the shoe and cut into blanks, generally in the manner of leather sole blanks, and these blanks may be sold to the trade to be later trimmed to the exact size of the shoes to which the soles are to be attached.

The heel 8 of the shoe is secured to the outer sole in the usual manner and since the cushioning layer covers the entire area of the shoe sole, this cushioning layer will absorb shocks and jars transmitted between the heel and the outer sole.

The application of the cushioned sole to the woman's shoe of Fig. 5 is essentially the same as that described in connection with the man's shoe of Figs. 1-4. The cushioned sole is capable of use with shoes of various styles, an important advantage being that the association of

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the cushioned sole therewith does not conspicuously alter their appearance from shoes using conventional types of soles.

While I have described a preferred embodiment of my invention it is to be understood that various changes in structure and design may be made therein without departing from the spirit of my invention as defined in the following claim.

I claim:

The combination with a shoe having an inner sole and an outer sole, of a cushioning layer interposed between the inner and outer soles, said cushioning layer comprising a layer of sponge rubber, a plurality of coil springs molded within and held against substantial side slip by said sponge rubber, said coil springs being more resistant to compression than said sponge rubber,

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and facing sheets of hard rubber molded to the top and bottom of said layer of sponge rubber.

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