May 12, 1936. J. T. RIDDELL 2,040,186

ATHLETIC SHOE SOLE PLATE

Filed Oct. 17, 1931

Fig. 1.

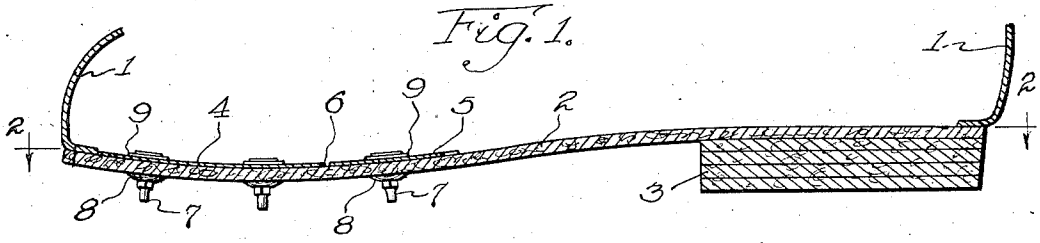


Fig. 2.

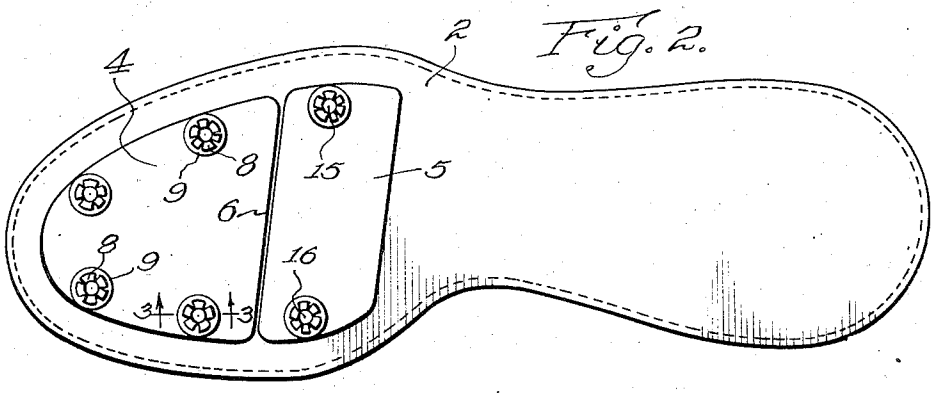


Fig. 4.

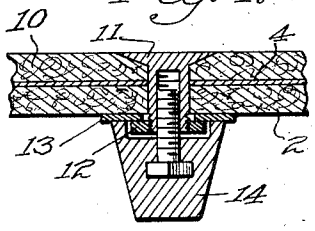


Fig. 3.

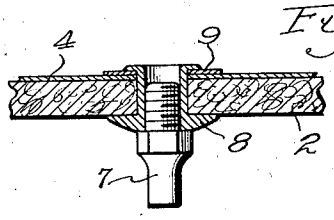


Fig. 6.

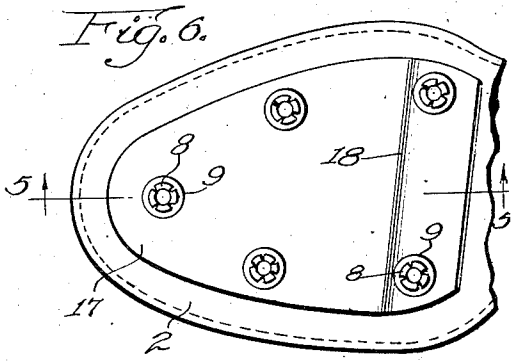
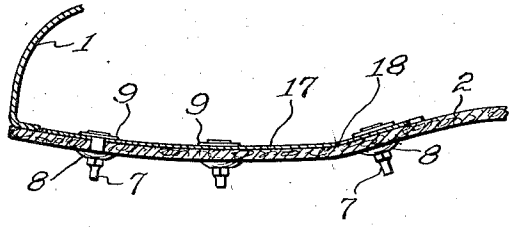


Fig. 5.



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2,040,186

ATHLETIC SHOE SOLE PLATE

John T. Riddell, Chicago, Ill.

Application October 17, 1931, Serial No. 569,439

1 Claim. (Cl. 36—2.5)

This invention relates to improvements in athletic shoe construction and particularly to improved means for reinforcing the soles thereof and preventing undue distortion under the stresses of active use.

The main objects of this invention are to provide a metal reinforcing means for shoe soles which will permit certain flexibility without danger of cracking or distorting the sole; to provide a metal reinforcing means that will not split or crack when the sole is flexed by the wearer; to provide a metal reinforcing means that will serve as a suitable anchor for cleats without imparting undue stiffness to the sole; and to provide a flexible metal reinforcing and cleat anchoring means for shoe soles which will prevent cracking of the sole and permanent distortion of the cleats fastened thereto.

A specific embodiment of the invention and one modification thereof are shown in the accompanying drawing, in which:

Figure 1 is a sectional view showing the invention as applied to the sole of a golf shoe, the usual insole being omitted from the figure.

Fig. 2 is a plan view of a shoe sole taken on line 2—2 of Fig. 1.

Fig. 3 is a sectional view through a cleat taken on line 3—3 of Fig. 2, showing method of securing the plate to the sole.

Fig. 4 is a sectional view similar to Fig. 3 but showing another form of cleat and plate securing method.

Fig. 5 is a fragmentary sectional view through a shoe taken on line 5—5 of Fig. 6 showing a modified form of sole reinforcing plate.

Fig. 6 is a plan view of the same.

As shown in Figs. 1 and 2 of the drawing a form of shoe 1 having a sole 2 and a heel 3 is provided with a metal plate reinforcement comprising two plates which when combined as shown take the shape of the forward half of the shoe sole 2. The forward part of the reinforcing means which constitutes a toe plate 4 and the rearward part or ball plate 5 are disposed on the sole in such a manner as to be slightly spaced apart on a line transverse of the sole, as at 6, and the parts 4 and 5 are so proportioned that the dividing space 6 will be positioned at the point where the shoe sole bends during the normal walking or running action of the wearer. The toe plate 4 reinforces the forward or toe end of the sole and the ball plate 5 being located beneath the ball of the wearer's foot, reinforces the center portion of the sole, thus effectively preventing the sole from cracking or buckling without detracting from the normal and necessary flexibility or free bending of the sole at the bending point just forward of the ball of the wearer's foot.

When applied to athletic shoes having cleats or calks mounted thereon the sole reinforcing plates are secured against lateral movement between the insole and outsole by the passage of the cleat fastener or securing means through spaced holes formed in the plate members. In the form shown in Figures 1, 2, and 3 a removable spike or calk 7 is threaded into a fastener 8 which passes through the respective reinforcing plate. On the upper or inner side of the sole the fastener 8 is shown expanded and clinched over a washer 9 lying above the reinforcing plate and in this manner the reinforcing plates may be secured to the shoe sole before the sole is fastened to the upper thereby simplifying the process of the shoe construction.

Another form of cleat and fastener is shown in Fig. 4 to illustrate the reinforcing plate 4 positioned between the outsole 2 and an insole 10 and secured against lateral movement by the fastener 11. In this case the plate 4 is not secured to either of the sole members, but is clamped between them by the nut 12 and washer 13 which act on the outsole 2 and the head of the fastener 11 which acts on the insole 10. The cleat 14, as the cleat 7, in Fig. 3, is attached after the shoe construction has been completed.

The sole plates are preferably made from spring steel in order to eliminate the possibility of the metal becoming permanently distorted under unusual strains and to serve the additional purpose of returning the cleats or calks to a normal vertical position after they have been subjected to any lateral twisting or turning action.

In shoes carrying cleats or calks the reinforcing plate serves the further purpose of bridging the space between the cleats or calks and preventing cracking or buckling of the sole, otherwise resultant from the naturally uneven distribution of the load and strains on the cleats, during ordinary use.

Experience has shown that when a single flat metal reinforcing plate is used to cover the forward half of the sole and extending from the ball of the foot to the toe, there is a constant tendency for the portions of the plate carrying the rear cleats, marked 15 and 16 to break away from the main body of the plate. The line of breakage usually begins at the natural bending point, at the edges of the plate and just forward of the ball of the wearer's foot, and extends diagonally to the back part of the plate, the separated por-

tions of the plate each including one of the cleats 15 and 16. This results in a distortion and breaking of the sole along the lines of plate breakage, permitting the cleats to become unstable and project angularly from the sole instead of vertically as they are intended to be.

By splitting the plate along the natural transverse bending line, as shown, this objection is overcome. The bending of the sole is localized to the dividing line between the plates and the plates will always remain intact to perform the sole reinforcing and cleat stabilizing function for which they are intended. Furthermore with this improved arrangement the sole is permitted a normal flexibility at the point where it is most necessary and the result is greater ease on the foot of the wearer with considerably less fatigue.

A modified form of my invention is shown in Figures 5 and 6 wherein a single sole reinforcing plate 17 is employed instead of the two plates 4 and 5 as shown in Figures 1 and 2. In this form the plate, preferably made of spring steel, extends over the forward half of the sole and is made with a transverse crease 18 positioned approximately under the ball of the wearer's foot and formed by sharply bending the plate about a transverse axis at that location so that the portion of the plate rearward of the crease will be upturned or set to follow the direction of the normal curvature of the sole as it approaches the shank portion at the arch of the shoe. With this form of reinforcing plate the bending action therein will tend to be transmitted to and take place at the crease 18, because the metal has been somewhat weakened at that point by the forming of the crease and the remainder of the plate is relatively more rigid. Thus the tendency of the plate to break on diagonal lines so as to separate the rearward cleat carrying corners of the plate is eliminated since the bending forces exerted on the shoe sole will be resisted by the plate and naturally transmitted to the weakest portion of the plate, the crease 18, where a fracture in the plate would not destroy its function. The rear cleats, of Fig. 5 and Fig. 6, being disposed in the upset portion of the plate 17, can thus readily carry a fore and aft strain which is localized and absorbed at the crease 18; and lateral strains are partially absorbed at the ends of the upset portion by the natural resiliency of the metal and otherwise transmitted to and absorbed at the crease 18.

Although but two specific embodiments of the plates of this invention are herein shown and described, it will be understood that details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claim.

I claim:

In an athletic shoe having a plurality of cleats secured to the bottom of the sole thereof, a sole reinforcing plate disposed on the inner side of the shoe sole and having a plurality of spaced perforations for cleat fasteners, said plate being formed with its backward end portion upwardly inclined from a transverse line adjacent the position of the ball of the wearer's foot to localize the bending of the sole thereto, the rearward pair of said perforations being disposed in said upwardly inclined portion and behind said transverse line in substantially parallel alinement therewith, and cleat fasteners passing through said perforations and sole.

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