May 24, 1938. J. T. RIDDELL 2,118,107

ATHLETIC SHOE SOLE PLATE

Original Filed Oct. 17, 1931

Fig. 1

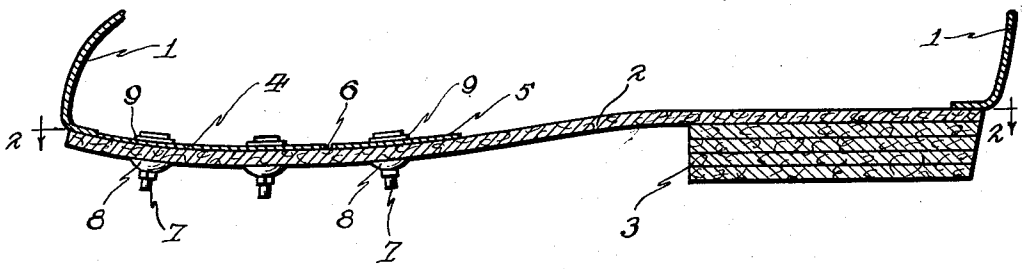


Fig. 2

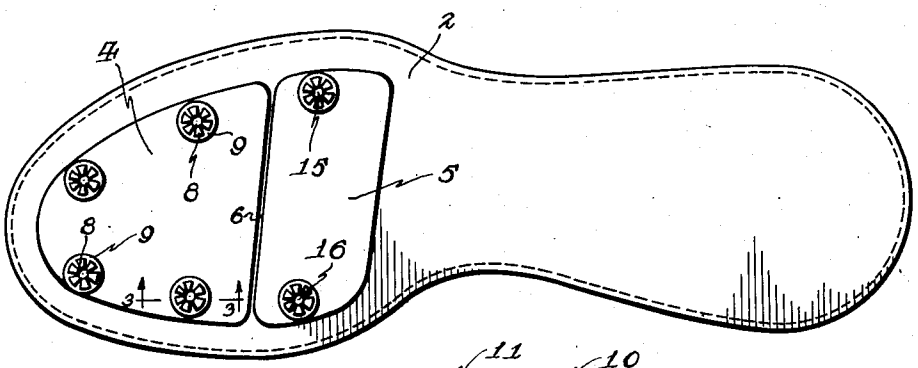


Fig. 5

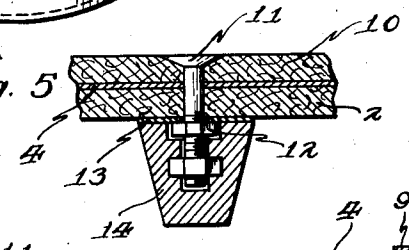


Fig. 3

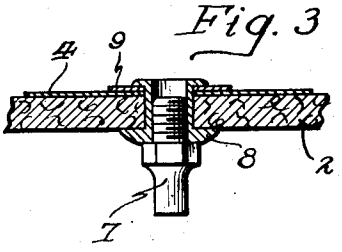
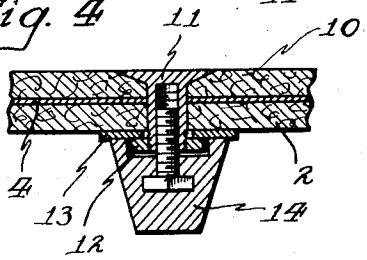


Fig. 4



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UNITED STATES PATENT OFFICE

2,118,107

ATHLETIC SHOE SOLE PLATE

John T. Riddell, Chicago, Ill.

Original application October 17, 1931, Serial No. 569,439. Divided and this application June 29, 1935, Serial No. 29,061

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; and this application is a division of my copending application, Serial No. 569,439, filed October 17, 1931, which has resulted in Patent No. 2,040,186, dated May 12, 1936.

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 serve as a suitable anchor for cleats without imparting undue stiffness to the sole; to provide a flexible 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 is 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 a 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 sectional view similar to Fig. 4, but showing another form of cleat fastener.

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 or adjacent the position 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 shoe 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 rear of the ball of the foot to the toe, there is a constant tendency for the portions of the plate carrying the rear cleats 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 portions 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 of the shoe sole, as shown, and locating the rear pair of cleats 15 and 16 near the lateral extremities of the ball plate 5 in substantial alinement with the transverse bending line, this objection is overcome. The bending of the sole is localized or substantially confined 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.

The rear cleats which cause most of the usual breakage and distortion of the shoe sole and the reinforcing means, being, in my improved arrangement, supported by an independent plate, are permitted to yield according to the load or force applied to them without affecting the normal functioning of the toe plate and the ball plate may yield independently to support the rear cleats and without danger of being strained to the point of breakage or permanent distortion.

Although but one specific embodiment of this invention is herein shown and described, it is to be understood that details as set forth may be altered or omitted without departing from the spirit of the invention as defined by the following claim:

I claim:

In a relatively heavy athletic shoe having a plurality of cleats secured to the bottom of the sole thereof, a sole reinforcing means disposed on the inner side of the shoe sole and having a plurality of perforations for cleat fasteners, said sole reinforcing means being formed of two parts which together take the shape of the forward half of the shoe sole and which comprise a one piece toe plate and a separate ball plate disposed side by side with their adjacent margins parallel and substantially on a transverse line adjacent the position of the ball of the wearer's foot so as to substantially localize the bending of the shoe sole to such transverse line, a pair of said perforations being disposed in said ball plate and positioned near the lateral extremities thereof and each being substantially the same distance from said transverse line, and cleat fasteners passing through said perforations and the shoe sole whereby diagonal splitting of the sole plate rearwardly of the ball is prevented.

JOHN T. RIDDELL.