Dec. 5, 1939. C. H. ERDMAN 2,182,375

SPIKED DETACHABLE SHOE SOLE

Filed May 14, 1938

Fig. 1

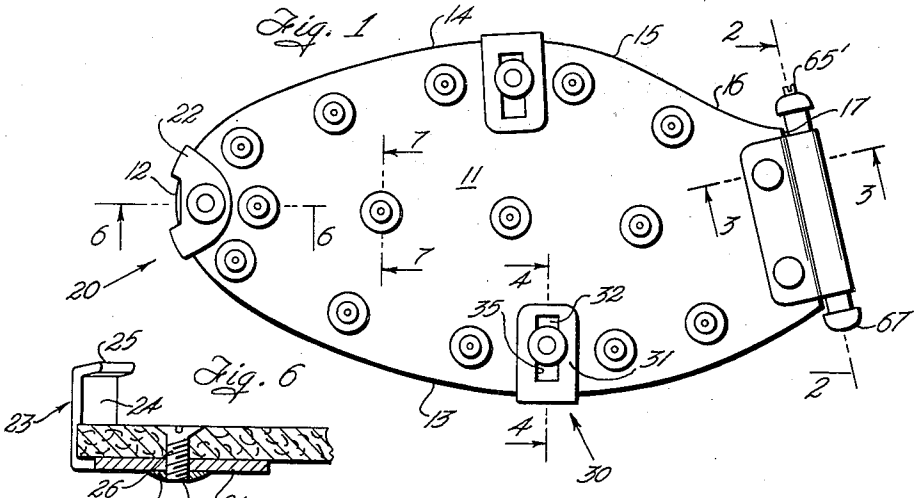
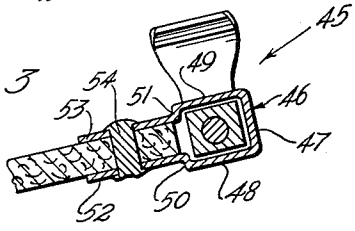


Fig. 6

Fig. 3



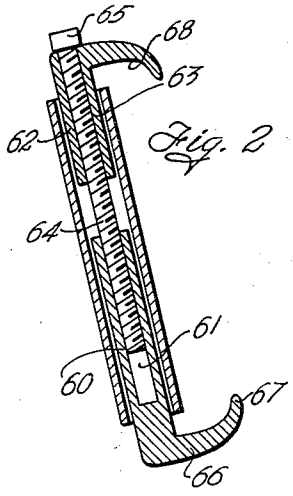


Fig. 2

Fig. 5

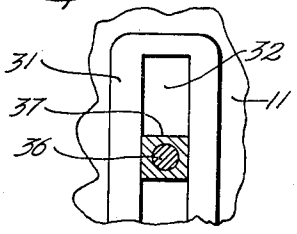


Fig. 4

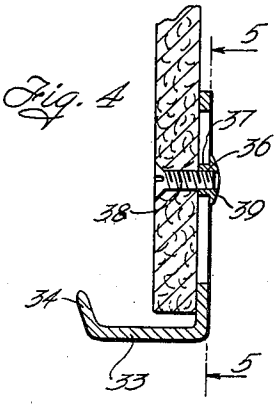
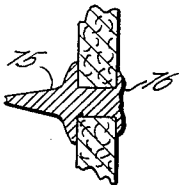


Fig. 7



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UNITED STATES PATENT OFFICE

2,182,375

SPIKED DETACHABLE SHOE SOLE

Carl H. Erdman, Fullerton, Calif.

Application May 14, 1938, Serial No. 207,952

6 Claims. (Cl. 36—7.7)

My invention relates to a detachable shoe sole of the type having spikes, studs or the like to prevent the wearer slipping. My invention is of a type useable for playing golf, for walking over rough country or preventing slippage on ice and the like. An object and feature of my invention consists of a thick sole shaped substantially the same as the sole of a shoe. These soles may be obtained in good quality material such as leather. With such construction my invention includes adjustable side grip jaws, a toe jaw and an adjustable pair of rear jaws. All of these jaws are arranged to engage over the edge of the sole of a shoe sole. Thus when the jaws are properly adjusted the device is attached firmly to the bottom of the sole of the shoe and being flexible in effect adds an additional thick sole. On the detachable sole I employ various studs or cleats depending on the purpose for which the device is worn.

Another characteristic of my invention relates to the centering action of the jaw at the toe of the extra sole, this having two spaced jaw elements which become centered on the sole of the shoe, thus causing the remainder of the detachable sole to conform to the shape of the sole of the shoe. Another characteristic of my invention relates to the adjustable side or marginal jaws, these having a slip mounting to be adjusted for width and when once adjusted to a sole of a shoe, they do not need to be changed. As the inturned edges of the jaws are so shaped that they may slide along the upper edge of the shoe sole until the toe jaw engages the toe of the shoe sole, then the toe jaw and the two marginal jaws bring the rear pair of jaws into proper position to engage the sole of the shoe slightly forward of the spring of the arch.

A further characteristic of my invention relates to the construction of the rear jaws assembly, this employing a hollow transverse guide formed of preferably a metal structure riveted to the rear edge of the detachable sole. The two jaws have shanks which are slidable in the guide from opposite sides, the guide being preferably rectangular in cross section and preventing the shanks and their jaws from turning. To obtain the clamping action a screw extends through a bore in one of the shanks and is threaded into the other shank, this having a recess internally threaded, therefore by rotating the screw through the medium of a wrench or a screw driver, both of the jaws at their shanks are moved inwardly until the gripping edge of the jaws fits snugly over the edge of the sole of the shoe. This rear jaw assembly is the only part that needs to be adjusted each time the device is placed on and removed from the shoe sole.

My invention is illustrated in connection with the accompanying drawing in which:

Fig. 1 is a plan showing the underside of the shoe sole.

Fig. 2 is a vertical transverse section on the line 2—2 of Fig. 1 in the direction of the arrows showing the rear clamping jaws.

Fig. 3 is a longitudinal section on the line 3—3 of Fig. 1 in the direction of the arrows.

Fig. 4 is a vertical transverse section on the line 4—4 of Fig. 1 in the direction of the arrows showing one of the adjustable lateral jaws.

Fig. 5 is a horizontal section on the line 5—5 of Fig. 4 in the direction of the arrows.

Fig. 6 is a longitudinal vertical section on the line 6—6 of Fig. 1 in the direction of the arrows.

Fig. 7 is a section on the line 7—7 of Fig. 1 in the direction of the arrows.

In my invention I employ a thick sole structure designated 11, this being preferably of leather curved to conform to the shaft of a shoe sole. This has the various edge portions, 12 being the toe, 13 a convex curve for the outside of the shoe, 14 a convex curve conforming to the inside of the shoe, this continuing to a reverse curve 15 and a short concave curve 16. There is a rear straight edge 17. This is to be located approximately at the beginning of the arch of the instep of a shoe.

The toe gripping jaws 20 include a plate 21 fitting flat on the underside of the sole 11. This has two laterally extending arms 22 from which the jaws 23 extend upwardly. Each jaw has a vertical strap member 24 and an inturned flange 25, the flange being at a slight inclination. Thus the two jaws are spaced apart as to the toe portion of the sole. The strap portions 24 fit snugly against the curve at the toe portion of the sole. This jaw assembly is rigidly fastened to the shoe sole by means of a counter-sunk screw 26 threaded into a beveled nut 27 and if desired, the end of the screw may be riveted at 28.

The side adjustable jaws 30 each employ a bottom plate 31 having a slot 32. There are upturned straps 33 at right angles to the plate and inwardly turned flanges 34, these being at a slight inclination. The side edges 35 of the slot are parallel and in such slot there is fitted a nut 36. Such nut has a flat side portion 37 to guide the plate in a sliding motion. A counter-sunk screw 38 extends through the shoe sole and is threaded into the nut 36. This nut has a flattened or a

beveled head 39. By loosening the screw using a screw driver, the grip between the head and the plate 31 is loosened and this allows the jaw straps 33 with the inturned flanges to be adjusted to fit snugly against the edges of the sole of the shoe, the flange 34 engaging the upper surface on the shoe sole outside of the welt. Manifestly when the screw is tightened the jaws are held tightly clamped, thus when the sole is fitted to a shoe sole, this adjustment does not need to be changed for either placing the detachable sole on the shoe or removing it therefrom.

The rear jaw assembly 45 includes a guide structure 46. This is made of a single metal plate characterized by a vertical end wall 47, lower and upper walls 48 and 49, slight inward bends 50 and 51 and lower and upper strap portions 52 and 53. These latter fit snugly against the upper and lower surfaces of the sole 11 and are secured by rivets 54. This guide structure is positioned so that the slight inward bends 50 and 51 are positioned slightly beyond the rear edge 17 of the sole. This guide thus forms a tubular guide structure, rectangular in cross section and open at the opposite ends.

Mounted in the guide structure there is a first jaw shank 60 rectangular in cross section and having a recess 61 which is screw threaded. The opposite jaw assembly has a similar rectangular shank 62 with a bore 63 extending therethrough. A screw 64 extends through the bore 63 and is threaded in the recess 61. The screw is provided with a wrench grip head 65 and in addition a screw driver kerf 65'. The gripping jaws on the two shanks are similar, being characterized by an upright member 66 and an inwardly curved flange 67. These jaws are preferably slightly rounded as by a convex curve 68 on the outside. In this construction it is preferable to have the inside bevel 69 merging with the inside edge of the jaws on a curve as when these jaws are clamped inwardly engaging the shoe sole adjacent the arch of the shoe, they may tend to bend the detachable sole upwardly, making this conform to the usual convex curve of the shoe sole considered longitudinally.

The sole is provided with a series of studs designated 75 secured at various places through the sole 11 by integral rivets 76, the rivet heads being pressed into the surface of the sole so that they do not inconvenience the wearer. It will be seen therefore that by this construction using counter-sunk screws to hold the various jaws and flat headed rivets for attaching the guide 46, that the upper surface of the detachable sole is practically smooth. In fact if desired, there may be a slight rabbet cut in the rear portion of the shoe sole to accommodate the straps 52 and 53. With this type of jaw construction as above mentioned, it is only necessary to adjust the rear jaw assembly with the shanks operating in the guide 46 to attach the sole to a shoe or to remove it from the shoe.

Of course it will be understood that the sole 11 may be of different thicknesses depending on the purpose for which my detachable sole is used and also the soles of the shoes are different thicknesses, therefore I provide interchangeable side jaws, assembly 30, and toe clips or jaws, assembly 20, which can be placed on the sole 11 by the user. The rear jaw assemblies will fit the usual thickness of shoe soles.

Various changes may be made in the details of the construction without departing from the spirit or scope of the invention as defined by the appended claims.

I claim:

1. In a device as described, the combination of a detachable relatively thick sole shaped as to its toe and side edges to conform approximately to the contour of the sole of a shoe and having a straight transverse rear edge, a fixed toe jaw assembly including a plate attached on the underside of the detachable sole and having a pair of upwardly extending straps with a flange, a pair of side jaw assemblies each including a plate adjustably attached to the detachable sole on the underside thereof and each having an upwardly turned strap with an inturned flange forming jaw elements, a rear jaw assembly including a tubular guide structure with upper and lower plates secured to the detachable sole adjacent its rear end, a pair of jaw shanks each having sole engaging jaws slidably mounted in the tubular guide, means to prevent relative rotation of the shanks and the guide, a screw extending through one of the shanks and threaded into the other shank for simultaneously adjusting the jaw-like structures on both of the shanks.

2. In a device as described and claimed in claim 1, the toe jaw assembly including a flat plate secured by a riveted connection to the detachable sole and having two laterally extending arms, each arm having one of the vertical straps.

3. In a device as described and claimed in claim 1, each side jaw assembly including a flat plate with a slot therethrough fitted on the underside of the detachable sole, the said slot having parallel sides, a screw extending through the detachable sole, a nut having parallel sides engaging in the slot with a head engaging the underside of the plate, the straps extending upwardly from the outer portion of each plate outside the side edge of the detachable sole.

4. In a device as described and claimed in claim 1, the said tubular guide structure being characterized by upper and lower parallel walls, an end wall connecting said upper and lower walls and the rear edge of the shoe sole, the shanks being rectangular in cross section thereby with the said walls and the end of the detachable sole forming the means for preventing the relative rotation of the shanks and the guide.

5. In a device as described, the combination of a detachable relatively thick sole shaped as to its toe and side edges to conform approximately to the contour of the sole of a shoe, and having a straight transverse rear edge, a rear jaw assembly including a guide with upper and lower walls, said walls having a forward extension, rivets securing such forward extension to the rear portion of the detachable sole, the upper and lower walls being parallel, an end wall formed integral therewith and parallel to the rear edge of the detachable sole thus forming a tubular guide rectangular in cross section, a pair of rectangular shanks one of which has a bore therethrough and the other having a threaded recess, an adjusting screw extending through the said bore and engaging the threads of the other shank, each shank terminating in an upright member and an inturned flange, said upturned member and flange being adapted to engage the sole of a shoe adjacent the instep arch.

6. A device as described, comprising in combination a relatively thick detachable sole-like structure shaped as to the sides and the toe portion to conform approximately to the contour of the sole of a shoe and having a transverse

end to fit across the arch of the shoe sole, a toe jaw structure secured to the toe portion of a sole and having jaws to engage the toe portion of the shoe sole and to center the detachable sole in regard to the shoe sole, a pair of side adjustable jaws having means to engage the sole of a shoe and a rear jaw assembly including a transverse guide member secured to the detachable sole adjacent its rear edge and having a pair of shank structures with jaws adjustably mounted in the guide whereby both of said latter jaws are simultaneously adjusted to engage a shoe sole, the rear jaw assembly including a tubular guide structure secured to the detachable sole adjacent its rear edge, the shanks being slidable in the tubular guide, a screw extending through one shank and threaded in the other shank, each shank having an upright member with an inwardly turned flange forming a jaw element to engage the opposite sides of the sole of a shoe adjacent the arch of such shoe.

CARL H. ERDMAN.