Nov. 26, 1940. P. J. KLEIN ET AL 2,222,747

SPIKE DEVICE

Filed July 2, 1940

Fig. 1

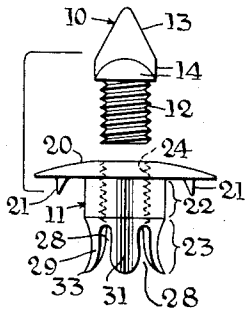


Fig. 2

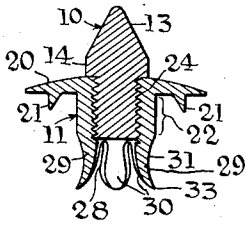


Fig. 3

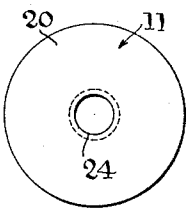


Fig. 4

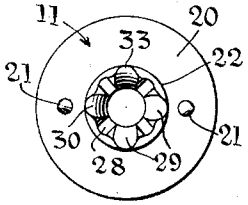


Fig. 5

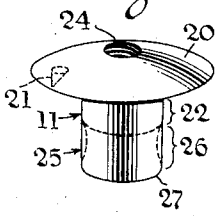


Fig. 6

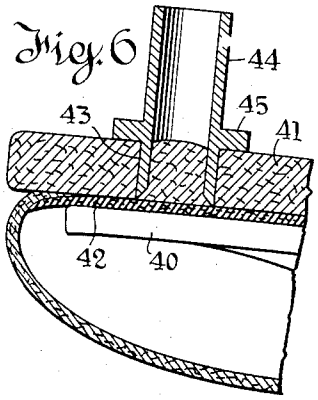


Fig. 7

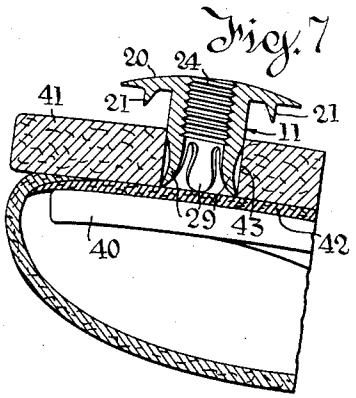


Fig. 8

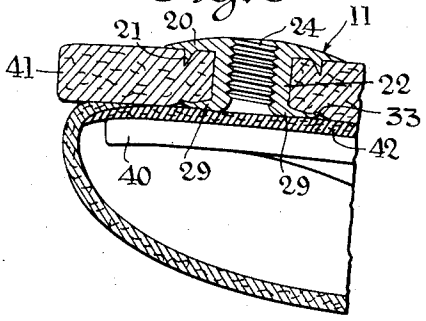
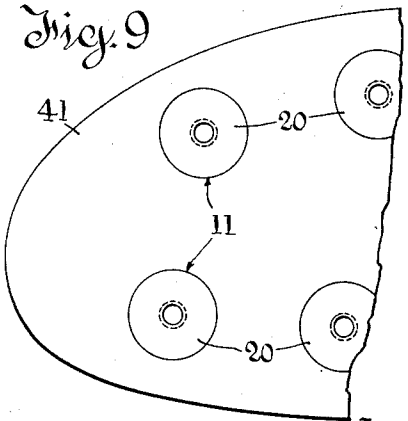


Fig. 9



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UNITED STATES PATENT OFFICE

2,222,747

SPIKE DEVICE

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8 Claims. (Cl. 12—142)

This invention relates to a novel shoe spike or calk construction and a method for attaching the same to an otherwise completed shoe.

Shoes with spikes or calks, such as golf shoes, are now in great demand and widely used. Nevertheless, an individual who desires to purchase a new pair of spiked or calked shoes has a rather limited selection of types and styles of shoes from which to choose. It is seldom that a manufacturer produces, or a shoe store carries, more than a few styles of spiked shoes, although it may have many types of spikeless shoes. The shoe trade has found that it is impractical to provide spiked golf shoes in a large variety of styles and each style in all conventional sizes, as many pairs of shoes would go unwanted and be left in stock.

In order not to be limited as to shoe style, it is the practice of some individuals to make their selection from smooth tread shoes which are available in numerous styles, and to then have the shoes provided with spikes. Two types of spikes or calks have, heretofore, been available for this purpose.

One type of spike or calk device, in order that it may be attached to an otherwise completed shoe, requires that the outer sole of the shoe be separated from the inner sole by cutting the outer sole stitching. One example of this type comprises a socket and a detachable spike. A number of the spike sockets are so applied to the inner face of the outer sole as to have a portion extend therethrough to receive a ground gripping member, which is assembled in place from the outer face of the outer sole. This form of golf spike, therefore, presents the objectionable feature of requiring that both sides or faces of the outer sole be free for the spike assembly operation and that the outer sole be separated partially or entirely from its shoe. Nevertheless, this prior art spike device has been widely used as it is durable and the possibility of accidental loss of the spike socket is avoided. It may be noted here that the golf spike just described is also used in factory production of spiked golf shoes, the spikes being applied to the outer soles before the latter are secured to the shoe uppers.

Another, or second, type of golf spike is adapted to be secured to shoes while the outer soles are still stitched to the shoe uppers. In other words, this golf spike does not require removal of the shoe sole and then its replacement. Consequently, the tasks of cutting the sole stitching and resewing the sole to the upper are avoided. This type of golf spike may be applied to many different styles of finished, smooth tread shoes and permits a golfer to obtain spiked shoes of his chosen style. Golf spikes of this second type, however, have in the past been of such construction that they have been found unsatisfactory for a number of reasons. They have been difficult to install properly in a shoe. They become loose during use of the shoe and frequently are lost. Furthermore, when removed, accidentally or intentionally, from a shoe sole, they leave a ragged opening, and a new spike must be secured at another place on the sole.

The spike or calk of this invention is of the second type described above, but is of a construction, which is an improvement over prior calks and spikes, which combines the advantages of both types of spikes or calks described above, and which avoids the above-noted objections to the prior constructions.

The spikes or calks of this invention, in a relatively simple operation, may be readily attached to otherwise completed shoes without necessitating removal of the shoe outer soles. The present construction is also relatively simple in construction, and is relatively inexpensive and simple to manufacture. This spike or calk is also adapted to be securely attached to a shoe outer sole and substantially avoids the possibility of its accidentally becoming loose or getting lost, while at the same time it is of such construction that it may be readily removed from a shoe sole by means of an appropriate tool without tearing or deforming the sole in the removal operation. The spike, therefore, may be replaced when it has served its useful life and permits the new spike to be attached at the point of removal of the old spike.

This invention also includes a novel method of applying spikes or calks to shoes. The method is a relatively simple procedure, requires no special skill, and enables an individual to apply securely golf spikes to otherwise completed shoes while the outer soles are attached thereto in normal manner.

It is, therefore, an object of this invention to provide a novel and improved form of spike or calk device of the type which may be applied to a finished, smooth tread shoe.

Another object is to provide a spike or calk which is of simple construction, which may be readily and inexpensively produced in large quantities, and which will insure its being securely held to the shoe sole once it is attached thereto.

Another object is to provide a novel method for

attached spikes and calks to shoes having smooth treads.

Other objects and advantages of this invention will be apparent from an understanding of the following description, the appended claims, and the accompanying drawing, which illustrates a preferred embodiment.

Referring to the drawing,

Figure 1 is an exploded view of the parts of a spike or calk device embodying this invention.

Figure 2 is another view of the spike or calk device of Figure 1 and is a cross sectional view of the spike device in assembled relation.

Figures 3 and 4 are respectively top and bottom plan views of the socket element shown in Figures 1 and 2.

Figure 5 is a perspective view of an element from which the socket member of Figures 1 and 2 may be formed.

Figures 6–9 illustrate successive steps in the method of this invention for applying the improved spike or calk construction to a shoe.

The accompanying drawing illustrates a spike or calk construction embodying this invention and shows a preferred form which is particularly suitable for use in golf shoes. This preferred form of the invention comprises a spike element **10** and a socket member **11**. The spike element **10** has an externally threaded shank **12** and a ground engaging member **13**. The ground engaging member or means **13** may be of a generally pointed shape, as illustrated in the drawing. The ground engaging member **13**, for example, may have its outer end of generally conical shape, and may have straight or flat sides **14** at its base for a purpose hereinafter described.

The socket member **11** may have a head portion **20** provided with pointed projections **21** on its underface, a substantially tubular or shank portion **22** depending from the underside or underface of the head **20**, and a tail portion **23**. The head **20** may be in the form of an apertured disk-like element, or an annular flange, which extends outwardly, or laterally, from the upper or outer end of the shank portion **22**. The head **20** also has an opening **24**, which is of the same size and which is in alignment with the interior of the shank portion **22**. The socket member **11**, as illustrated more clearly in Figure 2, is interiorly threaded from adjacent the upper face of the head **20** to about the lower end of the shank portion **22**. The spike element **10** is detachably secured to the socket member **11** by threading the spike shank **12** into the interior of the socket member **11**. With the spike element **10** and the socket member **11** in assembled position, as shown in Figure 2, the base of the ground engaging means **13** frictionally engages and rests upon the outer face of the socket head **20**. The spike element **10** may be readily attached to and removed from the socket member **11** by means of a suitable wrench or other tool conforming to the flat or straight sides **14** of the pointed member **13**. The spike member **10** when it becomes worn from use may be quickly replaced without requiring replacement of the socket member **11**.

The socket member **11** may be constructed from a blank, such as shown in Figure 5. This blank of Figure 5 comprises a head **20**, the projections **21** and a tubular-like portion **25**. The socket member **11** is formed by shaping the lower portion **26** of the tubular member **25** (Figure 5) to form the tail **23** of Figure 1. The tail **23** (Figures 1 and 2) may be formed by providing a continuous annular groove (shown in dotted lines in Figure 5) in the outer face, or periphery, of the portion **26** of the tubular member **25**. The surface of the groove is preferably arcuate or concave in cross section, and preferably extends from the end **27** of the tubular member **25** to the portion **22** (Figure 5) constituting the shank portion **22** (Figures 1 and 2) of the socket member **11**. The portion **26** (Figure 5) may also be provided with a plurality of slots **28** to form a plurality of spaced prongs **29** as illustrated in Figures 1 and 2. The prongs **29** are preferably equally distributed about the end of the shank portion **22**, and are preferably of similar shape and size. For best results, three or four of the prongs **29** should be provided. According to the preferred embodiment illustrated in the drawing, the socket member **11** has four of the prongs **29**. The lower portion **26** of the tubular member **25** in Figure 5 may also be interiorly shaped so that each of the prongs **29** in the completed socket member **11** has a relatively thin tip **33** and an inner face **30** provided with a generally convex shape, as shown, for example, in Figure 2. Each prong **29** has a generally concave shape for its outer face **31**, as a result of the grooving operation described above. It will thus be seen that each of the prongs **29** has a width somewhat greater than its thickness, tapers toward its relatively thin tip **33**, and extends from the shank portion **22** in a direction which is generally rearwardly and outwardly thereof.

Experience shows that the practical thickness for the outer sole of a spiked shoe is within the range of 8 to 12 irons, that is $\frac{8}{46}$ of an inch to $\frac{12}{46}$ of an inch in thickness. It is, therefore, preferred that the shank portion **22** of the socket member **11** have a length within a range on an order of $\frac{8}{46}$ of an inch to $\frac{12}{46}$ of an inch. It is also preferable that the length of the tail portion **23**, or the length of each prong **29**, be not greater than $\frac{1}{4}$ of an inch. The tips **33** of the prongs **29** are preferably disposed in a circular line, the perimeter of which has a diameter the same as the external diameter of the shank portion **22** (see Figures 1, 2 and 4). It is also preferable that the greatest overall diameter of the tail member **23** be not greater than the external diameter of the shank portion **22**, in order that the tail portion **23** may pass through an opening corresponding in shape and size to the shank portion **22**.

As a preliminary to attaching the spike device of this invention to an outer sole of a shoe, the outer sole is apertured as illustrated in Figure 6. In this operation, the shoe is supported on a conventional jack **40** (or shoe last if desired), so that the outer sole **41** may be supported below the point of the cutting operation. A circular opening **43** is cut in the outer sole **41** by a cutting device **44** or other suitable tool. The cutting operation is so performed that it is limited to the outer sole **41** and no opening is formed in the inner sole **42** of the shoe. In order to control the depth of the cutting operation, the cutting tool **44** may be provided with a flange **45**, which limits the cutting action by engaging the outer face of the sole **41** as shown in Figure 6. The opening **43** in the outer sole, is preferably of a diameter and shape corresponding to that of the shank portion **22** of the socket member **11**. The socket member **11** is now inserted into the opening **43**, as illustrated in Figure 7. The tail end **23** is introduced first into the opening **43** and

is positioned to rest on the face of the inner sole 42. The tips 33 of the prongs 29 are now arranged in a circle about the bottom of the opening 43 and extend in the general direction toward a position between the inner and outer soles 42 and 41. With the socket member 11 in the position illustrated by Figure 7, the socket head 20 is struck a sharp blow by means of a hammer or other suitable tool. The head 20 is thus forced into engagement with the outer face of the outer sole 41. At the same time, the projections 21 are driven into the sole 41, as shown in Figure 8, to prevent accidental rotation of the socket member 11 relative to the outer sole 41. As the socket member 11 is driven home by the sharp blow, the inner sole 42 deflects the prongs 29 into the clinching position illustrated by Figure 8, wherein the prongs 29 extend in a generally radial direction from the inner end of the shank portion 22, lie between the outer sole 41 and the inner sole 42, and have their tips 33 turned slightly into the outer sole 41. As the tips 33 of the prongs 29 are relatively thin, they are readily adapted to slip between the outer sole 41 and the inner sole 42 in the clinching operation. The deflection of the prongs 29 is also facilitated by the convex curvature of their inner faces 30. The cut-out portions or grooves of the prongs 29 which provide the concave faces 31 also facilitate the bending movement of the prongs 29 during their deflection by the inner sole 42.

The foregoing method is followed in attaching each of a plurality of spike or calk devices to the outer sole 41. After the socket members 11 are secured to the outer shoe sole 41, the shoe will appear as in Figure 9, and the spike members 10 may be threaded into the socket members 11.

While it has been discovered that the above described construction substantially avoids the possibility of the socket member 11 being accidentally loosened or lost from the shoe outer sole 41, it is also found that the socket member 11 may be removed from the shoe when it has become worn and requires replacement. This removal operation may be conveniently performed by inserting a sharp instrument such as a screw driver between the edge of the head 20 of the socket member 11 and the outer surface of the sole 41. The socket member 11 may then be pried loose, and the portion of the outer sole 41 about the opening 43 will force the prongs 29 to return to a position approximating the normal position shown in Figures 1 and 2, so that they will not appreciably tear the sole 41 or deform the opening 43 in the withdrawal operation.

Experience shows that the socket member 11 may be formed of steel, and that a steel socket member (11) will operate as described above. If desired, a softer and more ductile material may be used in forming the prongs 29 or the entire socket member 11. It has also been found that when a spike or calk device is applied as described above, the prongs 29 are deflected into a clinching position between the outer and inner soles 41 and 42, whether the inner sole 42 is formed of solid leather or softer material.

It may be mentioned that it is important to have the prongs 29 lie between the inner and outer soles 42 and 41 rather than extend through the inner sole 42 and into the interior of the shoe. If the prongs 29 were to extend through the inner sole 42, they would be apt to be a source of annoyance to the wearer.

The golf spike devices of this invention are preferably used with shoes having outer soles (41) of leather, but may also be applied to shoe outer soles of other material which will provide a strong foundation for the socket members 11.

It is to be understood that the foregoing is illustrative and that this invention includes all embodiments and modifications coming within the scope of the appended claims.

We claim:

1. A spike device for attachment to an otherwise completed shoe, the shoe having an inner sole and an apertured outer sole; said spike device comprising a spike portion, an annular flange, a tail portion, and a shank portion intermediate said flange and said tail portion; said shank portion depending from the under side of said flange portion, and being adapted to be inserted in said outer sole aperture; said tail portion including a plurality of prongs adapted to spread into a clinching position between the outer and inner soles of said shoe when the spike device is applied to the outer sole aperture and is struck a blow while the shoe is supported by a jack or the like, said tail portion having an overall diameter not greater than the overall diameter of said shank portion; at least the outer portion of each of said prongs having an outer face of generally concave shape and an inner face of generally convex shape; said prongs having relatively thin tips lying substantially in a circular line the perimeter of which has a diameter substantially the same in size as the overall diameter of said shank portion; said flange being adapted to limit the insertion of said spike device and to engage the outer face of the shoe outer sole when said prongs are in said clinching position.

2. A spike device for attachment to a shoe having a smooth tread, an inner sole and an apertured outer sole; said spike device comprising a spike element and a socket member; said spike element having ground gripping means and an externally threaded shank for detachable engagement with said socket member; said socket member having a head portion, a tail portion and an intermediate substantially tubular portion; said head portion being in the form of an annular flange adapted for engagement with the outer face of the shoe outer sole, being provided with projections on the underface thereof to penetrate the shoe outer sole, and being apertured to receive the threaded shank of said spike element with said ground gripping means abutting the outer face of said socket head; said substantially tubular portion depending from the under side of said socket head portion, and being internally threaded for threaded engagement with the shank of said spike element; said tail and said tubular portions being adapted to be inserted in the aperture of said outer sole from the outer side thereof; said tail portion including at least three spaced prongs adapted to spread between the outer and inner soles of said shoe when the spike device is applied to the outer sole aperture and is struck a blow while the shoe is supported by a jack or the like; said tail portion having an overall diameter not greater than the external diameter of said tubular portion; said prongs having relatively thin tips lying substantially in a circular line the perimeter of which is substantially the same in diameter as the exterior of said tubular portion.

3. A spike device for attachment to an otherwise completed shoe, the shoe having an inner sole and an apertured outer sole; said spike device comprising a socket member and a detachable spike element, said socket member having a head, a tail, and an intermediate shank; said head being adapted to engage the outer face of the shoe outer sole and limit insertion of said socket member in the shoe outer sole; said socket shank depending from the under side of said socket head, and being adapted to be disposed in said outer sole aperture; said tail including a plurality of prongs and having an overall diameter not greater than the overall diameter of said socket shank; at least the outer portion of each of said prongs having an outer face of generally concave shape and an inner face of generally convex shape; said prongs having relatively thin tips lying substantially in a circular line the perimeter of which is substantially the same in diameter as the overall diameter of said socket shank; whereby said socket member is adapted to be applied to the shoe by insertion of said tail in the aperture of the shoe outer sole and by striking the socket head while said tail rests on the adjacent face of the shoe inner sole and while the shoe is supported by a jack or the like, and whereby the socket prongs, under the force of the blow on the socket head, are adapted to spread into a socket clinching position between the shoe outer and inner soles.

4. A golf spike device for attachment to the smooth tread of a shoe having an inner sole and an apertured outer sole, the aperture in the outer sole extending from the outer face thereof to the inner face thereof; said spike device comprising a spike element and a socket member; said spike element having ground gripping means and an externally threaded shank for detachable engagement with said socket member; said socket member having a head, a tail and an intermediate substantially tubular portion; said head being in the form of an annular flange adapted for engagement with the outer face of the outer shoe sole, being provided with projections on the underface thereof to penetrate the outer shoe sole, and being apertured to receive the threaded shank of said spike element with said ground gripping means abutting the outer face of said socket head; said substantially tubular portion depending from the under side of said socket head, being internally threaded for detachable engagement with the shank of said spike element, and being adapted to be inserted in the aperture of the shoe outer sole; said tail including a plurality of prongs and having an overall diameter not greater than the external diameter of said substantially tubular portion; at least the outer portion of each of said prongs having an outer face of generally concave shape and an inner face of generally convex shape; said prongs having relatively thin tips lying substantially in a circular line, the perimeter of which is substantially the same in diameter as the exterior of said tubular portion; whereby said socket member is adapted to be applied to the shoe by insertion of said tail in the aperture of the shoe outer sole and by striking the socket head while said tail rests on the adjacent face of the shoe inner sole and while the shoe is supported by a jack or the like, and whereby the socket prongs, under the force of the blow on the socket head, are adapted to spread into a socket clinching position between the shoe outer and inner soles.

5. A spike device for attachment to an otherwise completed shoe, said spike device comprising an element to be inserted through a shoe outer sole from the outer face thereof, a stop formation at the outer end of said element for engagement with the outer face of the outer sole to limit insertion of said element, the said element from its inner end to said stop formation being of a length greater than the thickness of the outer sole to which it is to be applied, the portion of said element adjacent to said stop formation and of a length corresponding generally to the thickness of said outer sole being formed to sustain the shape thereof during attachment to the shoe outer sole, the remainder of said element being in the form of separate prongs each terminating in a relatively thin tip extending in a direction inclined to the axis of said element, whereby the spike device is adapted to be applied to a shoe supported on a jack or the like by insertion of said element into the aperture of the shoe outer sole and by striking said stop formation to spread said prongs into a clinching position between the outer and inner soles of the shoe.

6. A spike device for attachment to a shoe having inner and outer soles, said spike device comprising a shank to be inserted through an opening in the outer sole of the shoe, said shank having a length within a range on the order of $\frac{5}{16}$ of an inch to $\frac{13}{16}$ of an inch; and a set of prongs extending from the inner end of said shank portion; each prong being not longer than substantially $\frac{1}{4}$ of an inch, and having a cut out portion on its outer face, a generally convex shape for its inner face, and a relatively thin, outwardly directed tip.

7. A method for making spiked shoes from shoes having outer and inner soles and a smooth tread while the outer sole is still sewed or otherwise secured to the shoe upper; which method comprises supporting the shoe on a jack or the like; cutting an opening through only the shoe outer sole; inserting a spike device into said opening with the inner end of the spike device resting on the face of said inner sole, said spike device having a shank portion corresponding substantially to the size and shape of said aperture and prongs extending from the inner end of said shank portion and curving rearwardly and outwardly therefrom; and striking a blow on the outer end of the spike device to cause said prongs to be deflected outwardly by the shoe inner sole into a clinching position between said inner and outer soles.

8. A spike device for insertion through the outer sole of a shoe, said spike device comprising a stop formation to limit insertion of the spike device, a shank extending from the inner face of said stop formation for insertion through a shoe outer sole, and a tail carried by the inner end of said shank, said tail being generally cylindrical, having an annular groove in its outer surface, having a plurality of substantially equally spaced, longitudinal slots, having its inner surface convexly curved, and being relatively thin at its outer end.

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