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SWITCHABLE SHOE SPIKE

The present invention is generally directed to shoes, and in particular to spikes used on shoes. Although the present invention will be described with respect to golf shoes, it is to be appreciated that the invention is also applicable for use on other types of shoes including shoes used for recreation or industrial purposes.

Golf shoes typically include spikes to help the golfer to minimise the movement of the feet, limiting body rotation, and thereby improve the accuracy and consistency of their golf swing. These golf shoes include a series of metal or plastic spikes extending from the sole of that golf shoe.

Golf shoes using metal spikes do however have the tendency of tearing up and thereby damaging the surface of the golf course, and in particular the greens, when worn by a golfer. Therefore, many golf courses do not allow golfers to wear golf shoes with metal spikes. In these situations, golf shoes using the softer polymer spikes can be used. Polymer spikes do not effect the golf course surface in the same manner as metal spikes as they are broader, shallower and more flexible. At the same time, the plastic spikes do not provide the same hold on the ground surface as metal spikes. It would be advantageous for the golfer to be able to readily switch between metal or polymer spikes, as indicated by circumstance and location.

It is therefore an object of the present invention to provide a switchable shoe spike for a shoe.

With this in mind, according to one aspect of the present invention, there is provided a switchable shoe spike for a golf shoe, including a central hub having a first side from which a metal spike projects and a second side from which a plastic or rubber spike projects, engagement means for enabling the mounting of the shoe spike to a sole of the shoe, and support means for positioning the shoe spike in a first or second position corresponding with an exposure of the first or second side, wherein the support means positions the shoe spike through rotation about the central hub.

Whilst the invention seeks to solve the problem of interchangeability between metal and plastic spikes, the inventive concept of the invention provides for further advantages in offering alternatives to the user. Whilst many golf clubs



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ban the use of metal spikes on the course, most clubs ban the use of any type of spikes within the club house or other venues not directly associated with the course itself. Thus, following a match it is a source of inconvenience for the user to have to change shoes so as to avoid damage to floorboards and the carpet of the clubhouse. The present invention therefore can be extended to offer not only an alternative between metal and polymer spikes, but in a preferred embodiment a variation may provide an alternative between spikes and a flat surface for the user.

The central hub defines the interface between the opposing sides providing in one preferred embodiment the base of the metal spike and the plastic spike, and may provide a convenient location in order to mount the shoe spike to the engagement means, or possibly support means.

The engagement means may, according to one example arrangement, allow for pivotally support of the switchable shoe spike. The shoe spike may be pivoted to alternatively extend the metal spike or the polymer spike from the shoe sole. To this end, a cavity may be provided within the shoe sole adjacent each switchable shoe spike to provide sufficient clearance for the pivotal movement of the switchable shoe spike.

The switchable shoe spike may be pivotally supported on a pivot pin extending through the shoe spike. The pivot pin may be supported in a support means provided on or within the shoe sole. The support means may be a support bracket at least substantially supported within said cavity in the shoe sole. It is alternatively envisaged that at least one stub axle may extend from the shoe spike or the support bracket, with an aperture being provided in opposing sides of the periphery of the support bracket or shoe spike to accommodate the stub axes. Both arrangements would allow for pivotal support of the shoe spike on the shoe sole.

Locking means may be provided to hold the shoe spike in position when either the metal or polymer spike extends from the shoe sole and prevent unwanted pivotal movement of the shoe spike. The locking means may for example include at least one plunger having a spring-loaded ball bearing supported on the periphery of the shoe spike for engaging a co-operating depression within the support bracket when the shoe spike is in position. It is

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alternatively envisaged that one or more spring loaded ball bearings be provided on the support bracket, with the co-operating depression(s) being provided on the periphery of the shoe spike. The spring loaded ball bearing provides sufficient resistance to hold the shoe spike in position and prevent rotation thereof when in use, while at the same time allow the wearer to release and rotate the shoe spike when requested.

The engagement means may, in another example arrangement, allow the switchable shoe spike to be readily removed from, reversed and remounted on the shoe sole to facilitate the switching from metal spikes to polymer spikes and vice versa. A plurality of engagement means may extend from the periphery of the shoe spike. According to one example arrangement, each engagement means may be in the form of a flat tab or web extending radially from the periphery of the shoe spike. The use of other types of engagement means including spring loaded abutment members are also envisaged.

Support means may support the switchable shoe spike on the shoe sole. The support means may be in the form of a support bracket located on the shoe sole. The bracket may include locking means for co-operating with the engagement means of the reversible shoe sole. The support bracket may for example include a series of flanges or for co-operating with the tabs of the reversible shoe spike arrangement described above.

The flanges may extend in a spaced relation about a centre of the support bracket. The shoe spike may be located over the centre of the bracket and between the flanges and rotated such that the tabs of the shoe spike slide under and are trapped under the flanges. The shoe spike can therefore co-operate with the bracket in a similar manner to the way a camera lens engages the camera mount of a camera. A central opening may also be provided in the bracket to provide clearance for the shoe spike when mounted therein.

The support bracket will therefore support the shoe spike about its periphery when it is engaged with the bracket. It is also to be appreciated that the tabs may alternatively be provided on the bracket, with the flanges being provided on the shoe spike to co-operate with said engagement tabs.

The support brackets of the above described arrangements may be secured to the sole by fastening means. For example, fastening screws may

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pass through the bracket into the body of the sole to support the bracket thereon. Alternatively, the brackets may be glued to or moulded into the shoe sole.

The above described mounting arrangements allow the shoe spikes to be readily pivoted or removed from the sole, reversed and remounted in the sole.

5 This allows the shoe spike to be readily changed between the metal spike or the polymer spike. Furthermore, the use of a reversible shoe spike allows for a more convenient means of switching between different types of spikes and eliminates the need for different shoes depending on the type of spike required. It should however be appreciated that alternative support means for mounting the

10 reversible shoe spike to the shoe are also envisaged for the shoe according to the present invention.

According to another aspect of the present invention, there is provided a shoe having a plurality of switchable shoe spikes in a sole wherein each switchable shoe spike includes a central hub having a first side from which a

15 metal spike projects and a second side from which a polymer spike projects, engagement means for enabling the mounting of the shoe spike to a sole of the shoe, and support means for positioning the shoe spike in a first or second position corresponding with an exposure of the first or second side, wherein the support means positions the shoe spike through rotation about the central hub.

20 The shoe may include a plurality of said support means for supporting a plurality of the reversible shoe spikes on the sole.

According to a further aspect of the present invention, there is provided a shoe including a plurality of switchable shoe spikes as described above.

It will be convenient to further describe the present invention with respect

25 to the accompanying drawings which illustrate possible arrangements of the invention. Other arrangements of the invention are possible, and consequently, the particularity of the accompanying drawings is not to be understood as superceding the generality of the preceding description of the invention.

In the drawings:

30 Figure 1 is a perspective view of the sole of a golf shoe according to the present invention;

Figure 2 is an elevation sectional view of a switchable shoe spike according to one embodiment of the present invention;

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Figure 3 is a plan view of the switchable shoe spike of Figure 2;

Figure 4 is an elevation sectional view of a second embodiment of the present invention; and

Figure 5 is a plan view of the switchable shoe spike of Figure 4.

5 The exacting nature of the game of golf requires that precision, concentration and body movement all be controlled within very strict parameters, and that ones golf score is a direct reflection of how well one can control these parameters. There are a plethora of accessories that a golfer may incorporate within his game to assist in this control. One of the most vital of these being the
10 ability to limit the movement of ones feet during the swing, as excess movement can lead to an unwanted rotation of the body and thus add a degree of difficulty in the control of the aforementioned parameters. To this end it is widely recognised that a golfer must have sound shoes and good quality spikes that will assist in adhering the golfers feet to the ground during the swing.

15 Ideally, during the swing a golfers shoe would have anchors that would securely fix his feet to the ground. Clearly this is not achievable and so metal spikes have traditionally been incorporated, much to the concern of golf course management. The use of metal spikes is detrimental to the playing surface, in particular the putting greens, and so many courses ban the use of metal spikes in
20 favour of plastic spikes.

Plastic spikes are somewhat different in that they do not penetrate the ground as deeply as a metal spike, but provide a broader base by providing a disc of downwardly projecting serrations. While kinder to a golf course, plastic spikes are arguably not as effective as metal spikes. Clearly in order to gain the
25 greatest advantage a golfer would wish to optimise his environment and so where compelled will use plastic spikes, but where possible would prefer to use metal spikes.

The present invention provides an important innovation to the golfer in that he may conveniently have both plastic and metal spikes readily available.

30 Figure 1 shows a golf shoe (1), with golf spikes (3) projecting from the sole. These engage the sole in cavity (4) so as to be fixed in place for use. The actual projections (5) in this case metal spikes, will advantageously be switchable to plastic on operation of the present invention.

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Figure 2 shows one preferred embodiment of the invention whereby in this orientation, a plastic spike (5b) projects away from the sole (2) ready for use. However, the switchable shoe spike (6) provides for the arrangement to rotate around pin (7) so that the metal spike (5a) can be used when required. The pin (7) in providing this axis of rotation is secured to the support means (12), in this case a plate encircling the switchable shoe spike (6) which in turn has engaged flush plate (10) which is duly mounted to the sole (2) through flush screws (11). The metal spike (5a) in Figure 2 is currently withdrawn into the cavity (4) within the sole (2) with the walls of the cavity (4) being lined with an insert (8).

10 To clean or replace the switchable shoe spike (6) the user need only disengage the plate (12) from the insert (8) leaving in place the flush plate (10), screws (11) and insert (8), and having a unitary separable portion being the switchable shoe spike (6) with the pin (7).

The engagement of the plate (12) with the flush plate (10) is achieved in a "bayonet" operation whereby the plate (12) is inserted in key recess (13) and rotated until it has fully engaged with the flush plate (10). Thus, the operation of engagement is not unlike that of attaching a camera lens to a camera.

Because the switchable shoe spike (6) is readily rotatable for user convenience, it is necessary to provide a locking means whereby any rotation of the switchable shoe spike is effected when required only. In this preferred embodiment the locking means is achieved by a plunger (9) being spring loaded to permit a reciprocating motion when the plunger (9) is depressed inwards. As the plunger is directed from a peripheral edge of the spike towards the insert (8), the switchable shoe spike (6) is prevented from rotating until the user applies an adequate force to overcome the reciprocating spring.

In another preferred embodiment of the invention, it is possible to replace the flush plate (10) which is flush with the surface of the sole (2) with an offset flush plate (14) projecting outwards by a small degree from the sole (2). As the projection is still substantially less than even the shallow plastic spike (5b) this provides an advantage in that the depth of the cavity (4) is not as great as in the preferred embodiment of Figures 2 and 3. Thus, the present invention provides for alternative variants being a flush mounting as shown in Figures 2 and 3, or a balance of cavity depth as shown in Figures 4 and 5. In both cases the means of

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engaging the switchable shoe spike (6) with the flush plate (10) or the offset plate (14) is identical in that it makes use of the bayonet slide and rotate action.

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THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A switchable shoe spike for a golf shoe, including a central hub having a first side from which a metal spike projects and a second side from which a plastic or rubber spike projects, engagement means for enabling the mounting of the shoe spike to a sole of the shoe, and support means for positioning the shoe spike in a first or second position corresponding with an exposure of the first or second side, wherein the support means positions the shoe spike through rotation about the central hub.

1. The switchable shoe spike according to claim 1, wherein the support means includes a pin passing through the shoe spike to the engagement means and about which the shoe spike can selectively rotate from the first position to the second position and vice versa.

2. The switchable shoe spike according to claim 1, wherein the support means includes at least one stub axle connected to the shoe spike and the engagement means and about which the shoe spike can selectively rotate from the first position to the second position and vice versa.

3. The switchable shoe spike according to any one of the preceding claims, wherein the support means further includes locking means for preventing the shoe spike from rotating.

4. The switchable shoe spike according to claim 4, wherein the locking means includes at least one spring loaded plunger extending radially from a peripheral edge of the central hub and engageable with a recess in the engagement means or the sole.

5. The switchable shoe spike according to claim 4, wherein the locking means includes at least one spring loaded ball bearing in the engagement means and a cooperating recess in a peripheral edge of the central hub.

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6. The switchable shoe spike according to any one of the preceding claims wherein the engagement means includes an insert mounted in a cavity in the sole.

7. The switchable shoe spike according to claim 7, wherein the engagement means further includes a member selectively engageable with the insert.

8. The switchable shoe spike according to claim 8, wherein the connection of the pin to the engagement means is located on the member.

9. The switchable shoe spike according to claims 8 or 9, wherein the recess in the engagement means is located in the member.

10. The switchable shoe spike according to claims 8, 9 or 10, wherein the member includes a ring adapted to selectively engage the insert through a rotational sliding engagement parallel to the sole.

11. A shoe having a plurality of switchable shoe spikes in a sole wherein each switchable shoe spike includes a central hub having a first side from which a metal spike projects and a second side from which a polymer spike projects, engagement means for enabling the mounting of the shoe spike to a sole of the shoe, and support means for positioning the shoe spike in a first or second position corresponding with an exposure of the first or second side, wherein the support means positions the shoe spike through rotation about the central hub.

12. The shoe according to claim 12, wherein the support means includes a pin connected to the central hub and the engagement means and about which the shoe spike can selectively rotate from the first position to the second position and vice versa.

14. The shoe according to claim 12, wherein the support means includes at least one stub axle connected to the shoe spike and the engagement means and

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about which the shoe spike can selectively rotate from the first position to the second position and vice versa.

15. The shoe according to claim 12, 13 or 14, wherein the support means further includes locking means for selectively preventing the shoe spike from rotating.

16. The shoe according to claim 15, wherein the locking means includes a spring loaded reciprocating plunger extending radially from a peripheral edge of the central hub and engageable with a recess in the engagement means or the sole.

17. The shoe according to any one of claims 12 to 16, wherein the engagement means includes an insert mounted in a void in the sole.

18. The shoe according to claim 17, wherein the engagement means further includes a member selectively engageable with the insert.

19. The shoe according to claim 18, wherein the connection of the pin to the engagement means is located on the member.

20. The shoe according to claims 18 or 19, wherein the recess in the engagement means is located in the member.

21. The shoe according to claims 18 to 20, wherein the member includes a ring adapted to selectively engage the insert through a rotational sliding engagement parallel to the sole.

22. A switchable shoe spike as hereinbefore described with reference to Figures 2 and 3.

23. A switchable shoe spike as hereinbefore described with reference to Figures 4 and 5.

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