May 30, 1939. G. A. MORIARTY 2,160,601

ANTISLIPPING DEVICE

Filed Oct. 26, 1938

Fig. 1

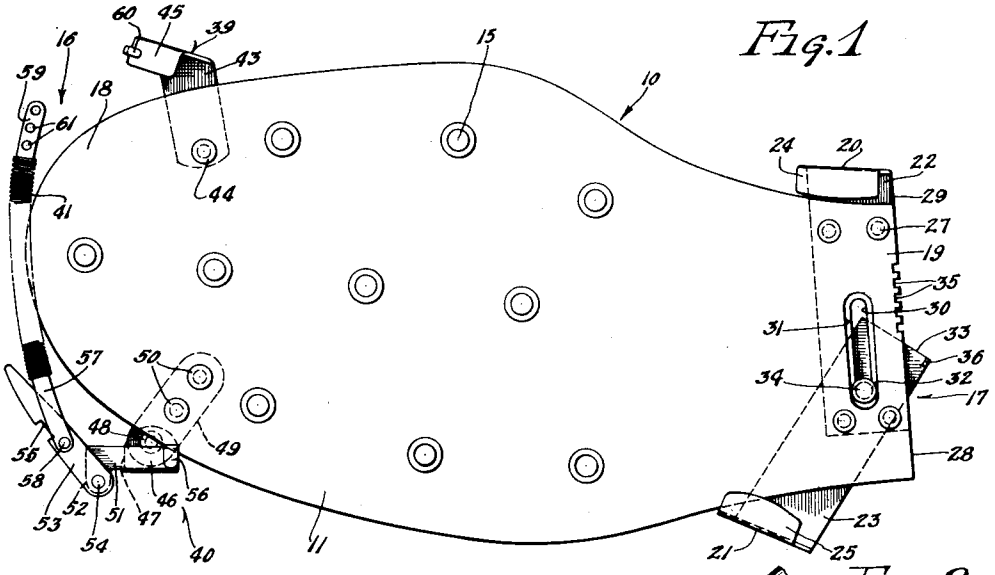


Fig. 2

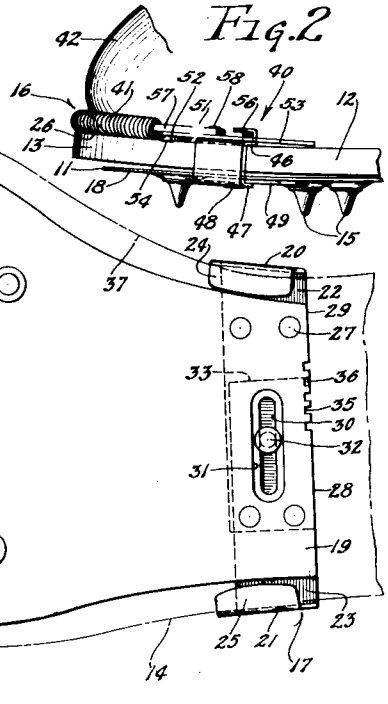


Fig 3

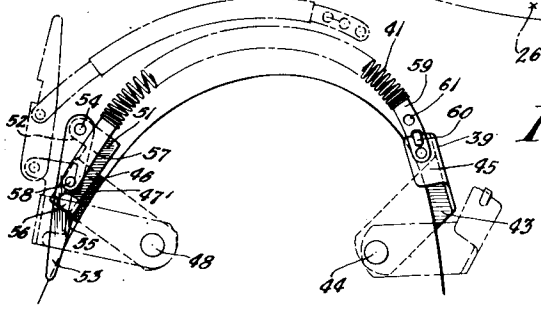


Fig. 4

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ANTISLIPPING DEVICE

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18 Claims. (Cl. 36—7.7)

The present invention relates to antislipping devices adapted to be removably attached to the soles of shoes and the like for the purpose of improving the footing of the wearer upon slippery surfaces.

Such devices find extensive application in various fields of work and in numerous sports, such as golf and baseball, and particularly on surfaces which frequently change their character and firmness as met for example in hill climbing.

The principal objections by wearers of removable antislipping devices as devised prior to this invention, and the main reasons why such prior devices have not found very extensive use, are that instead of affording surer footing and security against slipping, their construction was often so flimsy and their mounting on the shoe so insecure that their use was hazardous or even outright dangerous, or that they were of too costly, complicated, or heavy construction to serve as a practical substitute for a separate pair of shoes with permanent antislipping means.

Another disadvantage of most types of removable antislipping devices according to the prior art is their relative inflexibility and stiffness rendering them practically useless in all occupations or sports requiring shoes of easy flexibility.

It is a principal object of the present invention to provide an antislipping device which may be mounted on a shoe so as to be secure against unintentional loosening or removal therefrom.

Another object of the invention is the provision of an antislipping device of light weight and small size so as to be carried along easily in a pocket, and of such simple construction that even a small child can attach the same easily and quickly to the soles of its shoes.

A further object of the invention is the provision of an antislipping device which can be easily and securely adjusted to fit various types and sizes of shoes without requiring the use of tools of any kind.

Another object of the invention is the provision of an antislipping device which may be attached to the sole while the shoe is on the wearer's foot and without requiring tilting or bending of the foot during such attachment.

Still another object of the invention is the provision of an antislipping device of flexible construction which does not materially affect the flexibility of the shoe, and which improves the elasticity of the shoe and its sole to which the device is attached.

A feature of the invention, therefore, resides in providing an antislipping device which is securely mounted on the sole of a shoe by the manipulation of a single lever.

Another feature of the invention is the provision of an antislipping device with clamping means which are automatically adjusted to fit different types or sizes of shoes.

Complementary features of the invention are the provision: of a pair of mounting clamps at the forward portion of the antislipping device, at least one of which is pivoted relative to the other; of a pair of clamps at the rear portion of the device; and of adjustable means for locking said rear clamps in various positions relative to each other.

A further complementary and very important feature of the present invention is the provision of a single spring or similar resilient means which is adapted to serve the multiple function of maintaining the forward or toe clamps in gripping relation with the sole of a shoe, maintaining the single locking lever in closed position, gripping the toe portion of the shoe intermediate the sole and the upper, and maintaining the rear clamps both in adjusted position relative to each other and in secure gripping relation with the sole of the shoe.

These and other objects, features and advantages will appear from the following detail description of the invention, and the drawing, in which

Figure 1 is a plan view of the antislipping device according to the present invention, in inoperative position.

Fig. 2 is a fractional side view of the device shown in Fig. 1 in operative position.

Fig. 3 is a view similar to Fig. 1, but showing the new device in operative position.

Fig. 4 is a fractional detail view showing a slightly modified arrangement in both operative and inoperative positions.

Before describing the present improvements and mode of operation thereof in detail it should be understood that the invention is not limited to the details of construction and arrangement of parts shown in the accompanying drawing, which are merely illustrative of the present preferred embodiments, since the invention is capable of other embodiments, and the phraseology employed is for the purpose of description and not of limitation.

Referring more particularly to the drawing, and first to Figs. 1 to 3, the antislipping device 10 includes a resilient plate 11, preferably of

metal, of a size and shape substantially conforming with the forward portion of the sole 12 of a shoe, and extending from a point near the front end 13 of the sole 12 to the instep portion 14 thereof, as indicated in dot-and-dash lines in Fig. 3. A plurality of spikes 15 are securely mounted on the plate 11 to project downwardly therefrom.

For securing the spiked plate 11 to the sole 12, gripping means 16 and 17 are provided at the front and rear portions 18 and 19, respectively, of plate 11, which are designed to be adjustable relative to each other to fit different types or sizes of soles and to be mutually cooperating to grip the sole securely.

For this purpose, the rear gripping means 17 form an adjustable yoke and include clamping members 20 and 21 which are slidably and pivotally associated with each other and consist of substantially flat superimposed strips of metal 22 and 23 which carry at their outer ends hooked portions 24 and 25 adapted to extend over the welt 26 of the shoe at opposite sides thereof.

As shown in Figs. 1 and 3 of the drawing, preferably the inner clamping member 20 of each pair of antislipping devices is rigidly secured to the plate 11 at the rear end 19 thereof through mounting the strip 22 by means of rivets 27 or any other suitable means on the undersurface of plate 11 so that the rear edge 28 of plate 11 overlies the rear edge 29 of strip 22.

For associating clamping members 20 and 21 to be adjustable relative to each other, a longitudinally extending slot 30 is provided in the stationary strip 22, and a similar slot 31 but of slightly larger dimensions, is formed in the plate 11. A stud 32 which is secured to strip 23 of the outer clamping member 21 at a point spaced from the outer end 33 thereof, fits slidably and pivotally within slot 30. An enlarged head 34 on stud 32 which is adapted to slide within slot 31 in plate 11, prevents stud 32 from dropping out of slot 30 and secures the outer clamping member 21 to the inner clamping member 20 and, through the latter, to plate 11. A plurality of notches 35 are further provided in the corresponding rear edges 28 and 29 of the plate 11 and strip 22, and an upstanding finger 36 on the outer end 33 of strip 23 is adapted to engage into one or another of notches 35 so as to secure clamping member 21 in various positions relative to member 20.

For connecting the rear portion of plate 11 securely to the sole of a shoe, a simple adjustment of the outer clamping member 21 is made by pivoting the same forwardly about stud 32 so as to disengage finger 36 from notches 35; sliding the member 21 into one or the other direction relative to member 20 until the hooked portions 24 and 25 of both members substantially engage and grip the sole 12 at opposite sides thereof; and then by pivoting the member rearwardly so that finger 36 engages into its corresponding notch 35 to hold member 21 in its new position. The locking of the adjustable member 21 in a fixed position relative to the complementary member 20 is effected by drawing the plate forwardly whereby a force is exerted by the outwardly curved portions 37 of the sole upon the hooked portions 24 and 25 tending to pull member 21 outwardly and pivot the same rearwardly or in a clockwise direction. Such tendency to pivot member 21 rearwardly constantly produced by the action of the forward gripping means 16 when in operative position, as described subsequently, maintains finger 36 within one of the notches 35, and members 20 and 21 in adjusted position relative to each other and in gripping relation with the sole 12.

The forward gripping means 16 which secure the toe portion 18 of plate 11 to the sole 12 and cooperate with the rear gripping means 17 to lock the same in adjusted position and in gripping contact with the instep portion 14 of the sole, include a pair of clamping members 39 and 40 at opposite sides of the toe portion 18 of plate 11, and a coil spring 41 connecting clamping members 39 and 40 and adapted to grip the tip of the toe portion of the shoe and to be placed intermediate the welt 26 and the upper 42.

According to the embodiment of the invention shown in Figs. 1 to 3, clamping member 39 comprises a lower flat portion 43 which is pivotally mounted near one end on the lower surface of plate 11 by a stud 44, and a flanged or hooked portion 45 which is bent or shaped so as to be inclined forwardly relative to the flat portion 43, thus permitting greater pivotal movement of the hooked portion 45 relative to plate 11.

The other clamping member 40 is of substantially U-shaped cross-section and includes upper and lower arms 46 and 47, the latter being pivotally secured by a stud 48 to the outer end of a strap 49, which is rigidly mounted on plate 11 by rivets 50 or the like. Thus, clamping member 40 may be pivoted about a vertical axis approximately at, or closely adjacent, the outer edge of plate 11.

The forwardly projecting end 51 of the upper arm 46 of clamping member 40 is provided with an outwardly directed ear 52 on which a lever 53 is pivotally mounted about a pin 54. A notch 55 in lever 53 is adapted to engage with a hook-shaped projection 56 on the rear end of the upper arm 46 of member 40, which acts as a stop to limit movement of lever 53 in one direction.

For placing the two sets of gripping means 16 and 17 into engagement with the sole 12 of a shoe and for maintaining the same in gripping position thereon, the present invention provides a coil spring 41, the solid end portion 57 of which is pivotally mounted on lever 53 by means of a pin 58 intermediate pin 54 and stop 56. The other solid end portion 59 of spring 41 may be adjustably secured to the other clamping member 39 by means of a hook 60 provided on the forward end of the upper portion 45 of member 39, which is adapted to engage into one or another of a plurality of holes 61 in the end portion 59.

For securing the device described above and shown in Figs. 1 to 3 to the sole 12 of a shoe, the same is first placed into an inoperative position substantially as shown in Fig. 1, by disconnecting spring 41 from hook 60 and extending the yoke 17 to its extreme width. Plate 11 is then attached to the sole 12 so that the hooked clamping members 20 and 21 of yoke 17 are located at opposite sides of the instep portion 14 of the sole. Thereupon, clamping member 21 is slidably moved toward the complementary member 20 of yoke 17 until the hooked portions 24 and 25 of both members are substantially in engagement with the sole 12, whereupon member 21 is pivoted slightly rearwardly so that finger 36 engages into one of the notches 35. Plate 11 is then moved forwardly along sole 12 to the position shown in Fig. 3, the forward clamping members 39 and 40 are pivoted into engagement with the sole 12; spring 41 is secured to hook 60

by one or the other of holes 61, depending on the size and shape of sole 12, so as to engage the shoe intermediate the welt 26 and the upper 42; and then lever 53 is pivoted rearwardly from the position shown in Fig. 1 to that shown in Fig. 3 to tighten spring 41.

By such tightening of spring 41, the plate 11 is drawn forwardly whereby the hooked portions 24 and 25 of yoke 17 likewise are drawn into secure gripping engagement with the sole 12 and maintained in locked position relative to each other. Concurrently, clamping members 39 and 40 are pivoted into secure gripping engagement with the toe portion of the sole 12, while the spring 41 engages and grips the entire tip of the toe portion intermediate the clamping members 39 and 40.

When lever 53 is in closed position, as shown in Fig. 3, pin 58 on which spring 41 is mounted is spaced closer to the sole 12 than the pivot pin 54 of lever 53, so that the spring always tends to maintain lever 53 in such position and in engagement with stop hook 56.

Thus, it will be apparent that by the cooperation of the various gripping or clamping elements according to the present invention, the spiked plate 11 is mounted securely at its rear end on the sole at opposite sides thereof by the yoke 17, and at its entire forward end and around the tip of the toe portion thereof, by the clamping members 39 and 40 and spring 41. Such secure but resilient mounting has the further important advantage that plate 11 which may consist of relatively flexible material, adapts itself at all times to the changing contour of the tread surface of the sole 12 against which it rests, and that the flexibility of plate 11 is not affected by the mounting elements.

Furthermore, by the provision of: the adjustable yoke 17, the pivoting arrangement of the forward clamping members 39 and 40, the resilience of spring 41, and the possibility of adjusting the strength of the spring by engaging one or another of holes 61 with the hook 60, the plate 11 may be easily and securely connected to soles of various sizes and shapes.

The modification of the invention shown in Fig. 4 differs from the construction described above and shown in Figs. 1 to 3, merely in the substitution of a different pivoting connection of the outer forward clamping member 40' to plate 11. In order to permit a larger radius of movement of clamping member 40', and greater adaptability thereof to shoes of different size or shape, the lower arm 47' thereof is extended and pivoted directly on the plate 11 to function in a similar manner to the other clamping member 39.

In all of the forms, therefore, it is seen that the antislipping device provided by the present invention is simple in construction, very efficient and readily adaptable for use with shoes of different types, sizes or shapes.

Variations and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

Having thus described the invention, what is claimed as new is:

1. An antislipping device for shoes comprising a body member; antislipping means on said body member; pivotally and slidably related means for securing said body member to a rear portion of a shoe sole at opposite sides thereof; interengaging means associated with said securing means for limiting relative sliding and pivotal movement therebetween; and resilient means engaging the toe portion of the sole, drawing said securing means into gripping engagement with the sole and maintaining said interengaging means in operative relation.

2. An antislipping device for shoes comprising a plate; antislipping means on said plate; means on a rear portion of said plate adapted to engage a rear portion of the sole; and movable means on the forward end of said plate adapted to engage the toe portion of the sole and to maintain said rear means in engaging position with the sole.

3. An antislipping device for shoes comprising a body; means at the rear of said body adapted to grip a shoe sole; movable means at the front of said body, having gripping and nongripping positions; and means for maintaining said movable means in the gripping position.

4. An antislipping device for shoes comprising a plate; antislipping means on said plate; an adjustable yoke at the rear end of said plate adapted to clamp around a rear portion of a shoe sole; a pair of members adapted to engage the toe portion of the sole and grip the same at opposite sides thereof; and resilient means engaging the tip of said toe portion.

5. An antislipping device for shoes comprising an element; antislipping means on said element; a yoke having a pivoted member, adapted to clamp around a rear portion of a shoe sole; and resilient means engaging the toe portion of the sole and drawing and maintaining said pivoted member into gripping engagement with said sole.

6. An antislipping device for shoes comprising an element; antislipping means on said elements; a yoke adapted to clamp around a rear portion of a shoe sole; resilient means adapted to engage the toe portion of the sole; and releasable means for placing said resilient means into engaging position with the sole and for drawing said yoke into gripping engagement with the sole.

7. An antislipping device for shoes comprising an element; antislipping means on said element; a yoke at the rear end of said element adapted to grip a rear portion of a shoe sole; a pair of members mounted on said element to pivot relative to each other, and adapted to clamp the toe portion of the sole at opposite sides thereof; and resilient means connecting said members and adapted to draw the same into engaging position with the sole.

8. An antislipping device for shoes comprising an element; antislipping means on said element; a yoke at the rear end of said element adapted to grip a rear portion of a shoe sole; a pair of members mounted on said element so as to pivot relative to each other, and adapted to clamp the toe portion of the sole at opposite sides thereof; and resilient means connecting said members and adapted to engage the tip of the toe portion of the sole and to draw said members into engaging position with the sole.

9. An antislipping device for shoes comprising an element; antislipping means on said element; a yoke at the rear end of said element adapted to grip a rear portion of a shoe sole; a pair of members mounted on said element to pivot relative to each other, and adapted to clamp the toe portion of the sole at opposite sides thereof; resilient means connecting said members and adapted to engage the tip of the toe portion of the sole and to draw said members into engaging position with the sole; and releasable means for

locking said resilient means and said members in engaging position with the sole.

10. An antislipping device for shoes comprising an element; antislipping means on said element; an adjustable yoke adapted to grip around portions of a shoe sole at opposite sides thereof, and comprising a stationary clamping member on said element, a second clamping member mounted on said element so as to be slidable relative to said stationary member; means for locking said slidable member in adjusted position relative to said stationary member; and resilient means adapted to engage the toe portion of said sole and to maintain said slidable member in locked position.

11. An antislipping device for shoes comprising an element; antislipping means on said element; an adjustable yoke adapted to grip around portions of a shoe sole at opposite sides thereof, and comprising a stationary clamping member on said element, a second clamping member mounted on said element so as to be adjustable relative to said stationary member; means for locking said adjustable member in adjusted position relative to said stationary member; and means adapted to engage the toe portion of said sole and to maintain said adjustable member in locked position.

12. An antislipping device for shoes comprising an element; antislipping means on said element; an adjustable yoke adapted to grip a rear portion of a shoe sole at opposite sides thereof, said yoke comprising a stationary clamping member, a second clamping member slidably and pivotally mounted on said element and adapted to be pivoted rearwardly from a slidable position to a locking position; and means for clamping the forward portion of said sole, and for maintaining said yoke in gripping engagement with the sole, and said pivotable member in locked position.

13. An antislipping device for shoes comprising an element; antislipping means on said element; connecting means on said element for securing a rear portion thereof to a shoe sole; a pair of clamping members pivotally mounted on said element and adapted to grip a forward portion of the sole at opposite sides thereof; and resilient means on said members for pivoting the same into gripping position.

14. An antislipping device for shoes comprising an element; antislipping means on said element; connecting means on said element for securing a rear portion thereof to the sole of a shoe; a pair of clamping members pivotally mounted on a forward portion of said element and adapted to grip the sole at opposite sides thereof; a resilient member connecting said clamping members and adapted to engage the forward end of said sole; and means for tightening and releasing said resilient member.

15. An antislipping device for shoes comprising an element; antislipping means on said element; connecting means on said element for securing a rear portion thereof to said sole; a pair of clamping members pivotally mounted on a forward portion of said element and adapted to grip the sole at opposite sides thereof; a resilient member connecting said clamping members and adapted to engage the forward end of said sole; and a single element for placing said rear connecting means, said forward clamping means and said resilient member into gripping engagement with said sole.

16. An antislipping device for shoes comprising an element; antislipping means on said element; connecting means on said element for securing a rear portion thereof to a shoe sole; a pair of clamping members pivotally mounted on a forward portion of said element and adapted to grip the sole at opposite sides thereof; a resilient member connected at one end to one of said clamping members; and a lever pivotally connecting said other clamping member with the other end of said resilient member for tightening the latter and for thereby pivoting said clamping members into gripping engagement with the sole.

17. An antislipping device for shoes comprising an element having antislipping means thereon; means for securing a rear portion of said element to a shoe sole; a pair of clamping members mounted on a forward portion of said element, adapted to grip a forward portion of the sole at opposite sides thereof, at least one of said clamping members being pivotally mounted; and resilient means connecting said pair of clamping members and engageable with the forward end of said shoe for maintaining said pivoted member in sole gripping position and for maintaining said rear securing means in gripping relation with said sole.

18. An antislipping device for shoes comprising an element having antislipping means thereon; means on said element for securing a rear portion thereof to a shoe sole; a pair of clamping members mounted on a forward portion of said element, adapted to grip a portion of the sole at opposite sides thereof, at least one of said clamping members being pivotally mounted; a lever; pivot means connecting said lever and said pivoted clamping member; and resilient means connected to said lever at a point spaced from said pivot means, and connected to said other clamping member on the opposite side of said element, said resilient means urging said pivoted clamping member away from said sole when the lever is swung in one direction and urging said pivoted clamping member toward and in gripping relation with the sole when the lever is swung in the other direction.

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