United States Patent [19]

Cameron

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[45] **June 19, 1973**

[54] **ATHLETIC SHOE**

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[21] Appl. No.: **123,945**

[52] **U.S. Cl.** ..... **36/2.5 AG,** 36/67 R

[51] **Int. Cl.** **A43b 00/00,** A43c 15/00

[58] **Field of Search** ..... 36/2.5 R, 2.5 A, 36/59 R, 67 A, 67 D, 67 R, 2.5 AE, 2.5 AG, 2.5 H

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Primary Examiner—Patrick D. Lawson

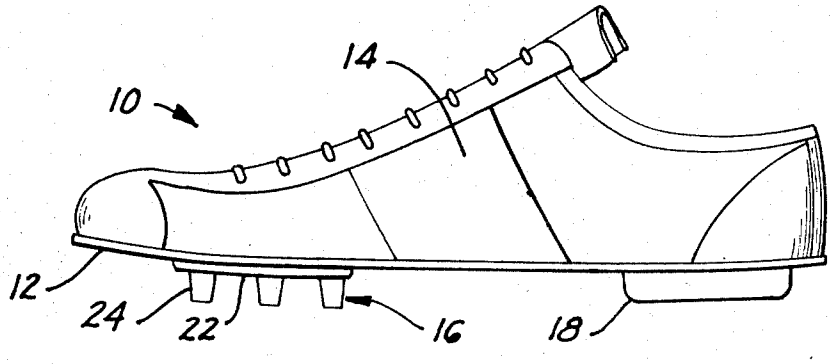
Attorney—J. Vincent Martin, Joe E. Edwards, M. H. Gay, Alfred H. Evans and Jack R. Springgate

[57] **ABSTRACT**

An athletic shoe having a sole with an upper secured thereto and a turntable having traction means thereon being rotatively mounted to the underside of the sole, said turntable being secured to a plate which is retained by structure associated with said sole but is rotatable about an axis perpendicular to said sole and including sealing means to prevent the entry of deleterious material between said turntable and said sole and a heel having rearwardly extending traction means.

This abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

10 Claims, 7 Drawing Figures



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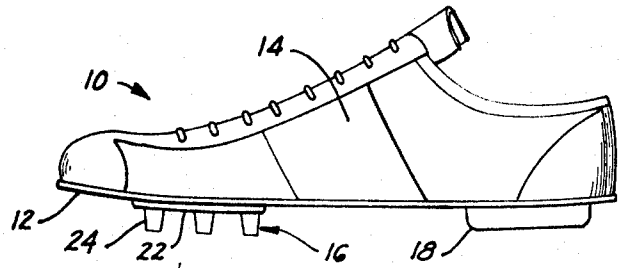


Fig. 1

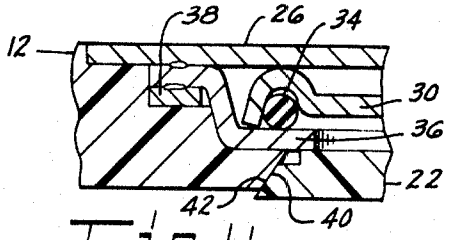


Fig. 4

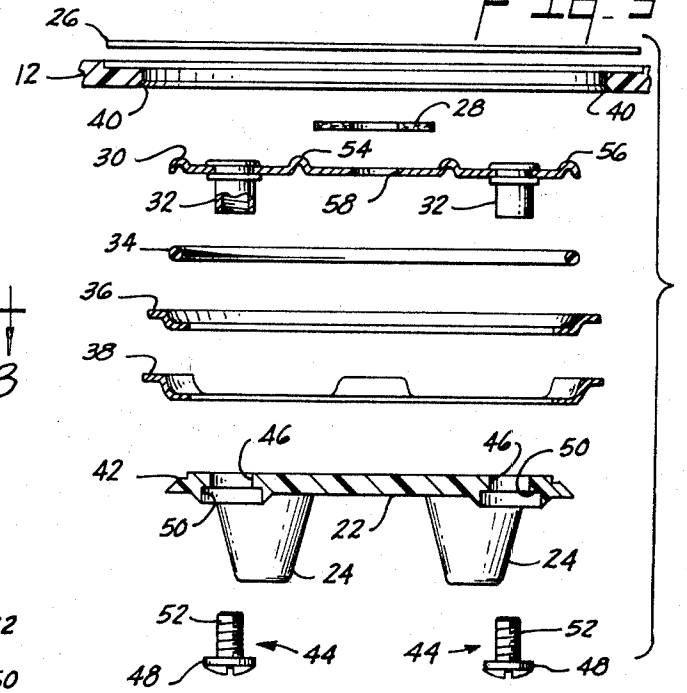


Fig. 5

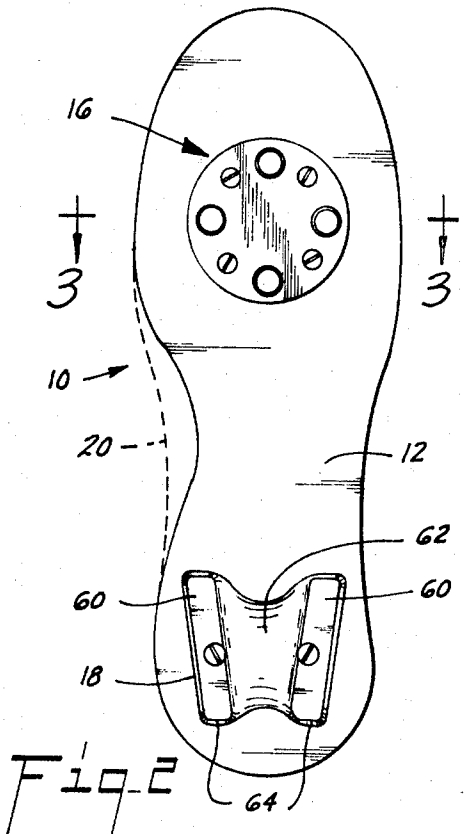


Fig. 2

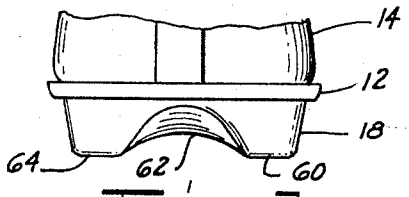


Fig. 3

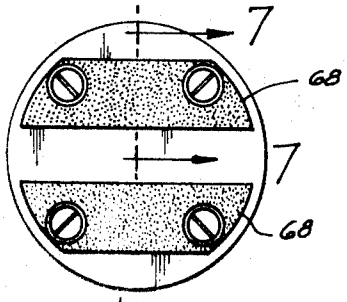


Fig. 6

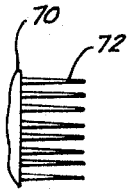


Fig. 7

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ATHLETIC SHOE

SUMMARY

The present invention relates to an improved athletic shoe, and particularly is an improvement on my prior athletic shoe as disclosed and claimed in U. S. letters Pat. No. 3,354,561, issued Nov. 28, 1967, and entitled "Athletic Shoe Having Rotatable Cleat Means."

The concept disclosed in such prior patent is an athletic shoe which provides for the free swiveling of the foot of the wearer when cleated to the ground whereby a very significant reduction in injuries to the knee and ankle of the wearer is achieved.

An object of the present invention is to provide a cleat means for an athletic shoe which does not have metal studs in the individual cleats.

Another object of the present invention is to provide an improved athletic shoe with a rotatable cleat plate in which dirt and other material are sealed out of the area of support for the rotatable cleat means.

A further object is to provide an improved athletic shoe which allows a rotation of the shoe when cleated and which is lighter and easier to manufacture.

Still another object is to provide an improved athletic shoe with rotatable cleat means which are easily and quickly replaceable.

A still further object is to provide an improved heel for an athletic shoe.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other objects and advantages of the present invention are hereinafter set forth and explained with respect to the drawings wherein:

FIG. 1 is a side elevation view of the improved athletic shoe of the present invention.

FIG. 2 is a bottom view of the sole of the athletic shoe.

FIG. 3 is a rear view of the shoe of FIG. 1 to illustrate the configuration of the improved heel of the present invention.

FIG. 4 is an enlarged sectional view showing the assembled relationship of the cleating means and the shoe sole.

FIG. 5 is an exploded sectional view of the improved rotatable cleat means.

FIG. 6 is a bottom plan view of a modified form of cleat plate.

FIG. 7 is a partial sectional view taken along line 7—7 of FIG. 6.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

As used herein the term athletic shoe is intended to mean all shoes adapted to be worn to provide increased traction for the wearer with the ground utilizing traction means such as cleats, spikes or tread. For convenience of illustration, the traction means is illustrated herein in the preferred form as cleats.

The improved athletic shoe **10** of the present invention includes a sole **12**, an upper **14** secured to the sole by any suitable means, the traction means **16** and the heel **18**. For convenience of terminology, the exposed side of the sole **12** to which the traction means **16** and heel **18** are connected is termed the bottom. The bottom of the sole **12** is shown in FIG. **2** and the cut-out or removed arch portion **20** is shown by the dashed lines. From this view, it can be seen that a single sole

design with minor trim can be used for the right and left shoes.

The traction means **16** shown includes the circular plate **22** having cleats **24** projecting therefrom and the means for rotationally supporting plate **22** with respect to the sole **12**. The rotation support means for the plate **22** includes the base plate **26**, the washer **28**, the carrier plate **30**, having receptacles **32** thereon, the seal ring **34**, the seal retainer ring **36**, and the clamping ring **38**. The rotation support means is assembled with clamping ring **38** being suitably secured to base plate **26** as by spot welding. With rings **36** and **38** secured to base plate **26** the carrier plate **30** is free to rotate therebetween. O-ring **34** which is held between ring **36** and plate **30** provides a seal to prevent entry of dirt between plates **26** and **30**. The washer **28** is positioned within the ridge **54** between plates **26** and **30** and assists in minimizing the friction therebetween. When assembled, the assembly is suitably secured in its position in the sole **12**. The assembly may be secured in the recess in the sole by integrally molding the assembly with the molding of the sole **12**.

In the forming of sole **12**, it is preferred that the lower edge surrounding the support means is tapered outwardly and downwardly to form annular seat **40**. The outer edge **42** of plate **22** is also tapered at the same angle to mate with seat **40** as best shown in FIG. **4**.

The plate **22** is connected to the carrier plate **30** by the screws **44** which extend through the holes **46** with their heads **48** engaging the shoulders **50** and their threaded shanks **52** engaging receptacles **32**. In the event screws **44** are broken and plate **22** falls off, the shank portions of the screws remain in the receptacles **32** so that there is no sharp projection from the bottom of the sole **12**.

The carrier plate **30** is provided with the two annular ridges **54** and **56** which, in operation, engage the under surface of base plate **26**. These ridges provide a minimum of friction between plates **30** and **26** so that the traction means is easily related. The hole **58** in carrier plate **30** allows a suitable lubricant to be injected between carrier plate **30** and base plate **26** if desired. The seal ring **34** and the engagement between seat **40** and edge **42** both function to provide a seal preventing the entry of dirt or any other deleterious material into the rotating support means.

With the traction means **16** as described above, the cleats **24** are integrally molded or formed as a part of the plate **22**. This form of cleating means **16** is, therefore, such that if the cleats are broken or the plate **22** comes loose, there is no projecting metal post or other metal projection which would be a serious danger to other athletes.

The preferred material for the sole **12** is a thermoplastic ionomer resin derived from carboxylic acid containing monomer copolymerized with ethylene such as the product sold by duPont under the trademark SURLYN A.

The heel **18** has a body structure which is integral with or suitably secured to the sole **12**. The bottom of the heel body defines a pair of narrow, flat surfaces **60** which converge in the rearward direction and are separated by the shallow groove **62**. The rear of the heel body includes two spaced-apart projections **64** which function as traction means as hereinafter explained.

With the heel structure as shown, the flat surfaces **60** rest on the ground when the shoe is flat on the ground

and in this position the heel **18** does not offer any appreciable resistance to rotation of the shoe about the plate or turntable **22.** The edges of the surfaces **60** are slightly rounded so that they do not catch and interfere with such free rotation. The projections **64** are positioned facing rearwardly and adapted to engage the ground when only the heel portion of the shoe is in engagement with the ground. Such projections **64** thereby provide a traction means when the traction means of plate **22** are not in engagement with the ground to thereby allow the wearer of the shoe to dig in his heels and have adequate traction without interferring with the swiveling action of the traction means **16.**

A modified form of traction means is shown in FIGS. **6** and **7.** The circular plate **66** includes a pair of bristle or brush strips **68** which are mounted on the lower surface of the plate **66.** As shown in FIG. **7,** the strips **68** include the base material **70** which is suitably bonded to plate **66** and the bristles or projections **72** which extend therefrom. These projections **72** are preferably integral with the base material and are relatively resilient, being made of a resilient plastic material such as low density polyethylene. In the preferred form of such traction means, the projections **72** extend approximately 0.2 inches from the base material and are tapered outwardly. Also, the strips **68** will include approximately 256 projections per square inch. If desired, the entire surface of the plate **66** may be covered with such traction means except for the holes through which the fasteners **74** extend.

From the foregoing, it can be seen that the improved shoe of the present invention provides traction means which, when removed, does not have any studs or screws projecting therefrom, but does have a rotatable traction means which is sealed against the entry of dirt, a shoe which is light and reliable in the rotation traction means for prevention of injuries and improved heel for the shoe which does not interfere with the rotation of the shoe with respect to the traction means and provides traction means operative when the heel only engages the ground.

I claim:

1. A shoe comprising
an upper,
a sole secured to said upper,
traction means,
means for rotatively mounting said traction means to said sole,
said mounting means being wholly contained within said sole and including,
a base plate secured to said sole,
said base plate and said sole defining a recess,
a circular carrier plate,
means for retaining said carrier plate within said recess and allowing said carrier plate and a portion of said traction means to rotate therein,
means for securing said traction means to said carrier plate, and
means for sealing around the recess in said sole to prevent entry of dirt therein.

2. A shoe comprising
an upper,
a sole secured to said upper,
said sole defining a first recess extending therethrough and a second recess on the inside of said sole surrounding said first recess,
a base plate secured in said second recess,
a circular carrier plate,
means secured to said base and retaining said carrier plate within said recess and allowing said carrier plate to rotate with respect to said sole,
traction means, and
means for attaching said traction means to said carrier plate.

3. A shoe according to claim **1** including
an O-ring, and
a retainer ring secured to said base plate and coacting with said carrier plate to confine said O-ring therebetween and provide a seal to prevent the entry of dirt into the space between said base plate and said carrier plate.

4. A shoe according to claim **1** wherein said attaching means includes
a plurality of first threaded elements carried by said carrier plate, and
a plurality of second threaded elements adapted for threaded engagement with said first threaded elements and being in engagement with said traction means to attach said traction means to said carrier plate.

5. A shoe according to claim **1** wherein said attaching means includes
a plurality of internally threaded sockets carried on said carrier plate, and
a plurality of externally threaded fasteners extending through holes in said traction means to attach said traction means to said carrier plate.

6. A shoe according to claim **1** wherein said traction means includes
a circular turntable having a plurality of cleats extending therefrom,
said first recess in said sole being tapered downwardly and outwardly,
the exterior of said turntable having a diameter and taper adapted to engage and mate with said first recess taper.

7. A shoe according to claim **1** wherein said traction means includes
a multiplicity of resilient tapered projections.

8. A shoe according to claim **1** wherein
said base plate is integrally molded into said sole.

9. A shoe according to claim **1** including
a heel secured to the rear portion of said sole,
said heel providing minimum transverse traction when said traction means is in engagement with the ground and substantial traction when said traction means is above the ground.

10. A shoe according to claim **1** including
means positioned between said carrier plate and said base plate for minimizing friction therebetween.

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