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71 Applicant: **Plas-Tech, 8262 Clairemont Mesa Boulevard, San Diego California (US)**

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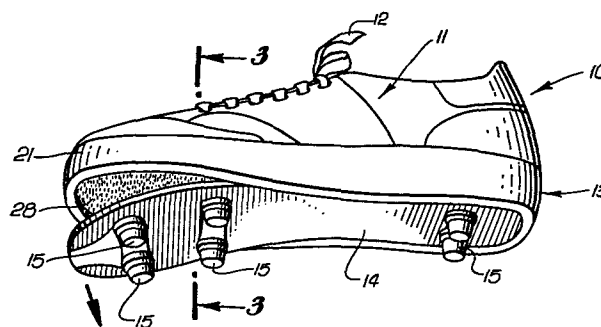
72 Inventor: **Hertz, Richard N., 6567 Caminito Catalan, La Jolla California 92037 (US)**
Inventor: **Courian, Curtis C., 1754 Edgefield Lane, Encinitas California 92024 (US)**

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74 Representative: **Howden, Christopher Andrew, FORRESTER & BOEHMERT Widenmayerstrasse 4/1, D-8000 München 22 (DE)**

64 Shoe with recessed removable sole.

57 An athletic shoe has a body portion 11 secured in a recess 22 in top of a sole assembly 13 and a full sole 14 fitted removably into a recess 23 in the underside of the sole assembly 13. The recess 23 is defined by a downwardly projecting rib extending around the perimeter of the underside of the sole assembly 13 and surrounding the sole 14. The sole 14 is held detachably in the recess with its underside flush with the lower end of the surrounding rib by two layers 27, 28 of hook-and-loop fastening material, one on the top wall afforded by the recess 23 and one on the top of the removable sole 14. A selection of removable and interchangeable soles 14 may be provided, with, for example, one removable sole provided with cleats on its underside, and another with a ribbed tread.



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SHOE WITH RECESSED REMOVABLE SOLE

THIS INVENTION relates to shoe constructions, and has particular reference to shoes with removable soles that are attached to the shoe body by separable or detachable means such as layers of loop-and-hook material of the type sold under the Trade Mark "Velcro". Such material is herein
5 referred to as 'loop and hook material'.

Prior shoe constructions of this general type are shown in Bauer US Patent No. 4,377,042 in which a flanged sole assembly is interlocked with the shoe body by a combination of loop and hook material and interlocking
10 structural elements, and Einstein US Patent No. 3,538,628 in which a combination of loop and hook material and locking lugs was used. In each of these, the separable connection formed in whole or in part by the loop and hook material permitted the changing of the sole of the shoe. Another prior shoe construction is shown in McCord US Patent No. 3,027,661, in which a
15 special-purpose insert was held in a recess in the central portion of a shoe sole by loop and hook material permitting changing of that central portion.

Of particular relevance is Dilg US Patent No. 4,279,083, in which an entire removable sole of substantially the same shape as the underside of
20 the shoe body is held on the body by layers of loop and hook material having perimeters that are contiguous with the perimeter of the underside of the shoe body, providing a simple and secure, yet easily detachable connection for the sole. This invention is an improvement in a shoe construction of the Dilg patent.

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It is an object of the invention to provide a new and improved shoe construction that is particularly well suited for athletic shoes.

According to this invention, there is provided a shoe construction
30 comprising: a shoe body for fitting around the foot of a wearer; a midsole portion disposed below said shoe body and secured thereto to lie beneath the foot of a wearer; a peripheral rib on said midsole portion extending

downwardly therefrom and cooperating with said midsole portion to define a downwardly opening recess; a sole disposed in said recess and having substantially the same shape as the recess to fit closely but removably along said rib, said sole having a body thinner than the depth of said recess and an
5 underside that is substantially flush with the lower end of said rib; and two layers of detachable coupling material disposed in said recess between said sole and said midsole portion; one layer being secured to the upper side of said sole, said layers being releasably coupled together to hold said sole releasably in said recess.

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In preferred embodiments, the entire removable sole is recessed into the underside of the shoe within the narrow protective rib extending around the perimeter of the underside of the shoe. The rib not only assists in securing the sole to the shoe and protecting the coupling material from the
15 elements, but also conceals the joint from view. The result is believed to be the optimum design for such shoe constructions in terms of simplicity and area of the portion that is removable and security of the detachable connection.

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Embodiments of the invention are described below by way of example with reference to the accompanying drawings in which:-

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FIGURE 1 is a perspective view of a shoe having a shoe construction in accordance with the present invention, the front portion of the removable sole being shown in partially detached condition;

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FIGURE 2 is an exploded perspective view of the shoe in Figure 1 on a reduced scale, with the sole detached, the arrows indicating movement of the sole to the attached position;

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FIGURE 3 is an enlarged cross-sectional view taken along line 3-3 of Figure 1; and

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FIGURE 4 is a perspective view of an alternative removable sole.

As shown in the drawings for purposes of illustration, the invention is embodied in a shoe 10 of the type having an upper body 11 composed of soft

material such as leather or canvas that is shaped to fit around the foot, a shoe lace 12, and a sole assembly 13 that is attached to the underside of the body to lie under the foot of a wearer (not shown). The illustrative shoe is of a well-known type that is popular for athletic use, in running or a variety of sports, and is shown in Figure 1 as having a sole 14 that is equipped with conventional lugs or cleats 15 for improving the wearer's footing in a soft running surface.

The upper body of the shoe is of conventional construction, and the sole assembly 13 is attached to the body in a conventional fashion, typically being cemented or vulcanized to the body, and sometimes stitched as well. In this instance, the material of the body is shown in Figure 3 as having lower edge portions which fit into the upper side of the sole assembly and are cemented in place. An insole 18 overlies these edge portions and provides the foot-engaging surface 19 of the sole assembly.

As can be seen most clearly in Figure 3, the sole assembly 13 has a central midsole portion 20 directly beneath the insole 18 and an outer wall 21 that extends entirely around the perimeter of the shoe body. The upper edge of this wall is an upwardly extending rib that defines an upwardly opening recess 22 in which the shoe body is secured, and the lower edge portion of the wall is a downwardly extending rib that defines a downwardly opening recess 23 in which the sole 14 of the shoe is secured.

In this instance, the midsole portion 20 and the wall 21 are shown as integral parts, typically molded of a suitable flexible material such as rubber or a plastic, the recess 23 being formed in the underside of the moulding and being of approximately the same shape, width and length as the shape, width and length of the shoe body, and having a substantially flat top surface 24 which is the underside of the midsole portion.

The removable or outer sole 14 comprises a strip of sole material that is thinner than the depth of the recess 23 by the combined thickness of two layers of loop and hook material 27 and 28, one layer 27 being secured to the top surface 24 of the recess and the other layer 28 being secured to the upper side of the sole 14. These layers are complementary, one carrying a loose pile of fibre loops and the other carrying a pile of hooks which are

engageable releasably in the loose pile of fibre loops. This material may be that sold under the Trade Mark "Velcro". An early form of such a material is shown in US Patent No. 2,717,437. One source of this type of material is Minnesota Mining and Manufacturing Company (3M), Minneapolis, Minnesota.

As shown in Figure 2, the recess has the same peripheral shape as the underside of the shoe body, extending from a rounded "heel" end through a relatively narrow "arch" portion to a wider "ball" portion and a rounded "toe" end, the downwardly extending rib preferably forming a continuous border for the recess along both sides and across both ends. The outer sole 14 has the same shape as the recess, and is only slightly smaller so as to fit closely, but removably, in the recess. When the sole is pressed into place and the two coupling layers 27 and 28 are engaged, the underside of the sole is substantially flush with, or slightly below, the lower end of the rib.

Mounted in this manner, the sole 14 is securely held on the midsole portion 20 and is surrounded and protected by the rib which defines the recess 23. From the outside, the shoe 10 appears to be conventional, and performs much as a conventional shoe performs, yet the sole 14 is removable simply by pulling or prying it out of the recess. Probably the easiest way to remove it is to insert one finger, or a tool (not shown) between the sole and the upper layer 27 at one of the rounded ends, and pull downward, starting the separation of the coupling layers at a narrow point and then pulling the sole progressively away from the shoe.

Shown in Figure 4 is a second sole 14¹ that is interchangeable with the first sole 14, having a different type of lower surface, herein a ribbed tread of a general-purpose nature. This sole is of the same shape and thickness as the sole 14, and has a layer of loop and hook material 27¹ which covers its upper side, for coupling engagement with the layer 28 in the recess. Thus after the sole 14 has been removed, the sole 14¹ can be installed on the shoe 10 simply by pressing it into the recess 23.

From the foregoing, it will be seen that the present invention provides a shoe construction in which a full sole is recessed into the underside of a sole assembly and held releasably therein by complementary

loop and hook layers while being protected and masked by the downwardly
extending peripheral rib which surrounds the recess. The result is optimum
simplification of the removable and interchangeable soles as well as
optimum performance of the shoe. It also will be evident that, while a
5 specific and presently preferred embodiment of the invention has been
illustrated and described, various modifications and changes may be made
without departing from the spirit and scope of the invention.

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CLAIMS

1. A shoe construction comprising: a shoe body for fitting around the foot of a wearer; a midsole portion disposed below said shoe body and secured thereto to lie beneath the foot of a wearer; a peripheral rib on said midsole portion extending downwardly therefrom and cooperating with said
5 midsole portion to define a downwardly opening recess; a sole disposed in said recess and having substantially the same shape as the recess to fit closely but removably along said rib, said sole having a body thinner than the depth of said recess and an underside that is substantially flush with the lower end of said rib; and two layers of detachable coupling material
10 disposed in said recess between said sole and said midsole portion; one layer being secured to the upper side of said sole, said layers being releasably coupled together to hold said sole releasably in said recess.
2. A shoe construction as defined in claim 1 in which said rib and said
15 midsole portion are formed integrally together.
3. A shoe construction as defined in Claim 2 in which said rib is continuous and substantially has the same outside shape as the periphery of
20 said sole.
4. A shoe construction as defined in Claim 1 wherein said layers are hook-and-loop material, one layer covering the underside of said midsole portion and the other covering the upper side of said sole.
- 25 5. A shoe construction as defined in Claim 1 wherein said midsole portion has a second peripheral rib extending upwardly to define an upwardly opening recess for receiving said shoe body, the first mentioned peripheral rib extending downwardly from said second peripheral rib.
- 30 6. A shoe construction comprising a shoe body and a sole assembly secured to the underside of the shoe body and having a midsole, an outer sole disposed beneath and having substantially the same shape as said midsole, a peripheral rib on said midsole extending downwardly therefrom and surrounding said outer sole, and connecting means between said midsole
35 and said outer sole for holding the latter releasably on said midsole.

FIG. 1

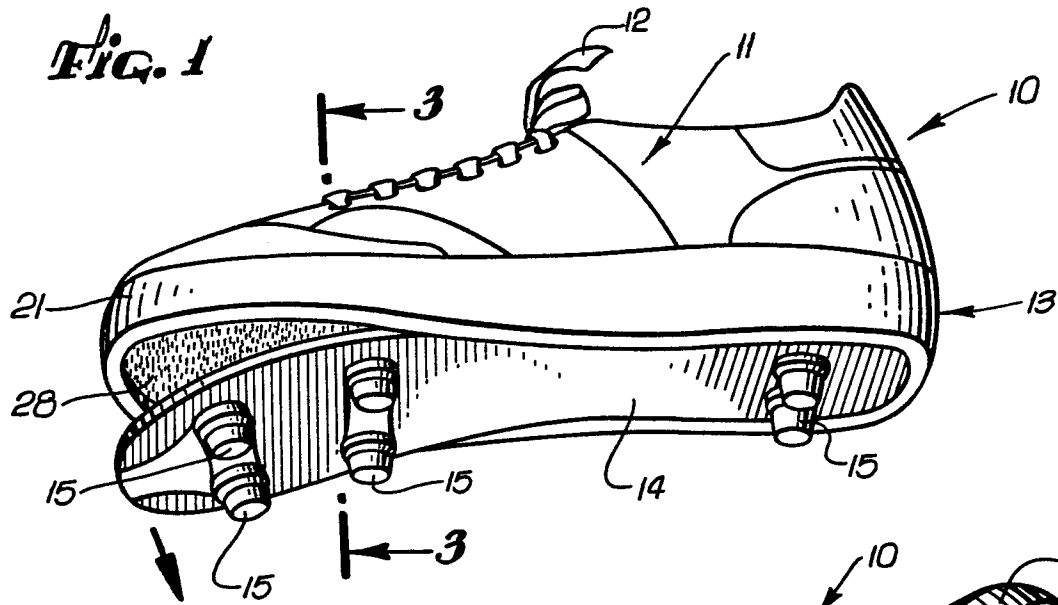


FIG. 2

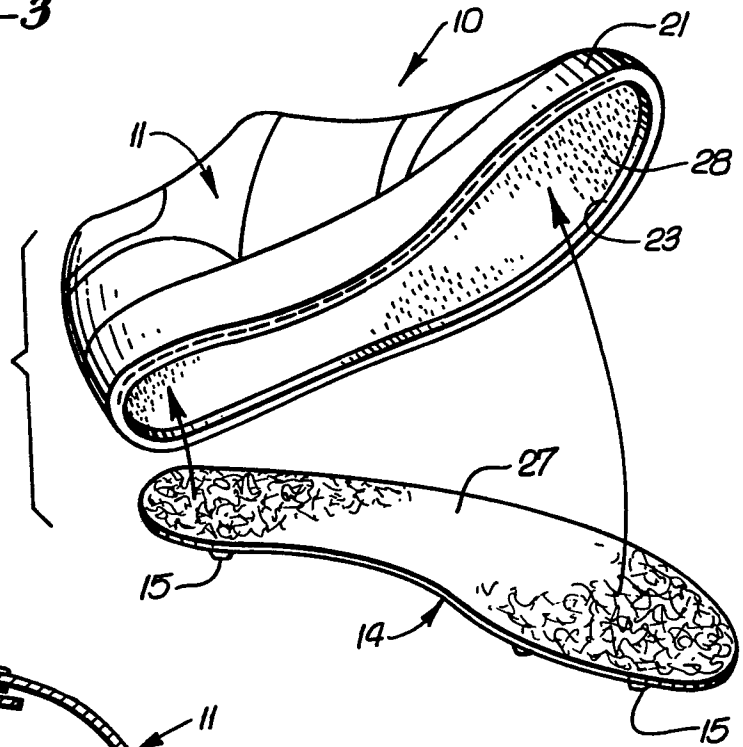


FIG. 3

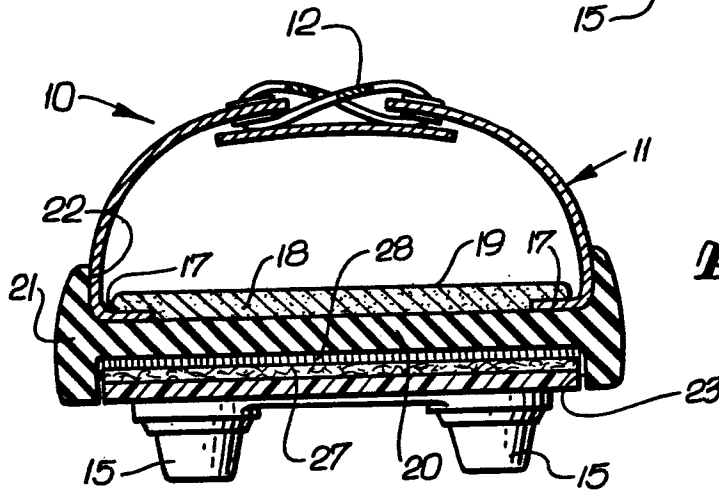


FIG. 4

