Dec. 3, 1968 C. W. KNEEBUSCH 3,413,737

FOOTBALL CLEAT

Filed Sept. 11, 1967

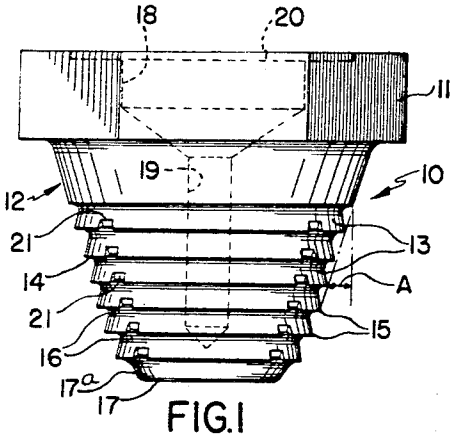


FIG. 1

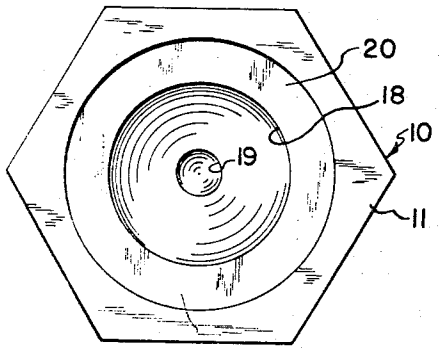


FIG. 2

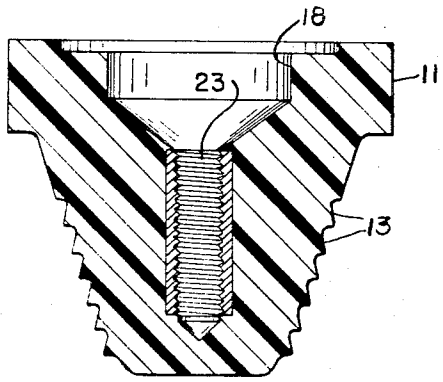


FIG. 3

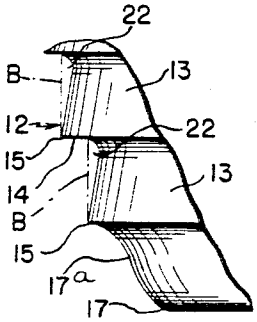


FIG. 1A

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FOOTBALL CLEAT

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ABSTRACT OF THE DISCLOSURE

A cleat for a football shoe or the like comprises a base portion for attachment to the sole of the shoe and a generally frusto-conical portion unitary with the base portion and converging downwardly therefrom. The surface of the generally frusto-conical portion is roughened to provide additional traction when embedded in the soil by providing a plurality of serrations encircling the periphery of the generally frusto-conical portion and generally at right angles to a plane through the axis of the frusto-conical portion. A preferred form of these serrations consists of reversed frusto-conical sub-portions converging upwardly and joined to adjacent sub-portions by short annular shoulder portions in planes generally at right angles to the axis of the cleat.

An object of the present invention is to provide an improved football cleat by providing improved traction and gripping surfaces which greatly increase the holding power of the cleat when embedded in soil but which, at the same time, is so engineered that it gives the proper attitude toward the ground during runs, turns and cuts and does not diminish the speed of the user.

Other advantages of this improved football cleat will be set forth in the appended drawings and specification and the essential features thereof are set forth in the appended claims.

In the drawings:

FIG. 1 is a side elevational view of one embodiment of my improved cleat;

FIG. 1A is an enlarged fragmental view of a portion of FIG. 1;

FIG. 2 is a top plan view of FIG. 1; while

FIG. 3 is a central sectional view through a cleat similar to FIG. 1 but showing an improvement in the manner of attaching the same to a shoe.

In the embodiment shown in FIGS. 1 and 2, the cleat **10** comprises a base portion **11** for attachment to the shoe. It is here shown as hexagonal in form, although it will be understood that other forms are suitable. A generally frusto-conical portion **12** is unitary with the base portion **11** and extends downwardly from the base portion axially concentric therewith and converging downwardly as indicated in FIG. 1.

To increase the holding power of the cleat, it is provided with a plurality of serrations encircling the peripheral surface of the generally frusto-conical portion **12**, these serrations arranged generally at right angles to a plane through the axis of the cleat.

A preferred form of the serrations, as shown in FIG. 1, comprises a plurality of short, reversed frusto-conical sub-portions **13**, each of which has its larger base downwardly and converges upwardly; and the upper part of each sub-portion is joined to the adjacent lower part of the sub-portion immediately above it by a short, annular substantially horizontal portion **14** which is generally in a radial plane with respect to the axis of the cleat. Preferably, each of the sub-portions terminates in a rather sharp, annular lower skirt edge **15** so as to bite into the soil, although in actual practice this skirt edge may be very slightly rounded at a radius of $\frac{5}{1000}$ of an inch. Likewise, at the annular zone **16** where a frusto-conical sub-portion meets the annular radial shoulder of the adjacent sub-portion above, a slightly rounded surface may be provided having a radius between .020 and .040 inch, .030 inch being preferred for easy release of soil from the cleat. The preferred angle of slope for the sub-portions is about 10 degrees from the vertical.

At the bottom of the cleat there is a generally flat bottom surface **17** which is connected with the first sub-portion **13** above it by a smoothly curved surface which, as shown in FIG. 1, is preferably an ogee curve **17*a*** in section.

As shown in FIG. 1, the frusto-conical envelope which just touches the sharp skirt edges **15** is inclined inwardly and downwardly from the vertical at an angle A which should be between about 15 degrees and about 20 degrees and in a preferred form is almost exactly 17 degrees. A preferred form of this cleat measures about ¾ of an inch across the flats of the hexagonal base portion **11** and measures about ¾ inch from top to bottom of the cleat as shown in FIG. 1.

The cleat may be attached to the shoe in any suitable manner, and I have shown a centrally located recess **18** on that side of the base portion presented toward the shoe sole to receive the head of a screw which is threaded into a smaller bore **19** extending downwardly and axially of the cleat. Preferably also a counterbore **20** is provided as shown in FIG. 1 and FIG. 2.

An improvement shown in FIG. 1 which may or may not be included in the cleat is the provision of roughening formations in the sharp annular skirt edge portions **15**. In FIG. 1, this takes the form of notches **21** spaced circumferentially around the skirt edges. These notches, or grooves, are preferably about .020 inch wide and .030 inch deep. In a preferred form, there are a plurality of rows of these notches, four being indicated in FIG. 1, and each row is located in a plane passing through the axis of the generally frusto-conical portion **12**. Other friction-producing formations could be provided in the skirt edges in substitution for the notches **21**.

It results from the construction just shown and described that the improved cleat of this invention gives greater holding power when embedded in the soil. Referring to FIG. 1A, as the cleat is pushed downwardly into the soil, each skirt edge **15** creates a slight vacuum as it opens up an annular chamber in the soil generally indicated by the reference character **22** in FIG. 1A and bounded roughly by a dot-dash vertical line B running upwardly from each of the skirt edges **15**. Actually, the boundary is a generally cylindrical form cut into the soil as indicated by the B in section in FIG. 1A. This action is particularly noticeable in mud.

It results from the construction of this cleat that it presents greatly increased surface area so that it holds more firmly in the soil during running, blocking and tackling and gives better traction both in dry soil, in muddy fields and on icy fields. At the same time, the formation of the surfaces of the cleat including the angle A of the converging sides of the cleat as it is thrust into the soil and the ogee surface **17*a*** at the point of penetration into the soil gives improved acceleration and speed to the player wearing these cleats.

An improvement shown in FIG. 3 is like the first embodiment except that a metal insert **23** is provided in place of the bore **19** mentioned in connection with FIG. 1 which is provided with internally directed threads to receive a screw for attachment of the cleat to a shoe.

Obviously the cleat of this invention may be made of

different materials as desired, but I have used certain synthetic resins such as polyethylene, nylon or Lexan. Lexan is preferred as being a thermoplastic polycarbonate resin possessing an unusual combination of toughness, impact strength, heat resistance, and dimensional stability. This is the trade name of a resin produced by the General Electric Company.

The number of frusto-conical sub-portions need not be six, as shown, provided the teachings of this invention are followed.

What is claimed is:

1. A cleat for a football shoe or the like comprising a base portion and a generally frusto-conical portion unitary therewith and extending from said base portion converging downwardly and axially concentric with said base portion, and a plurality of serrations encircling the periphery of said generally frusto-conical portion and generally at right angles to the axis of the cleat to provide additional traction when said cleat is embedded in the soil, said serrations are short reversed frusto-conical sub-portions converging upwardly and terminating in sharp annular lower skirt edges.

2. A cleat as defined in claim **1** including means forming an opening in said frusto-conical portion at right angles to said base portion to receive a member for securing said cleat to a shoe sole.

3. A cleat as defined in claim **1** including spaced deformations in said skirt edges.

4. A cleat as defined in claim **3** wherein said deformations are notches which lie in planes passing through the axis of said frusto-conical portion.

5. A cleat as defined in claim **1** wherein said generally frusto-conical portion slopes inwardly from said base portion at an angle between about 15 degrees and about 20 degrees from the vertical.

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