

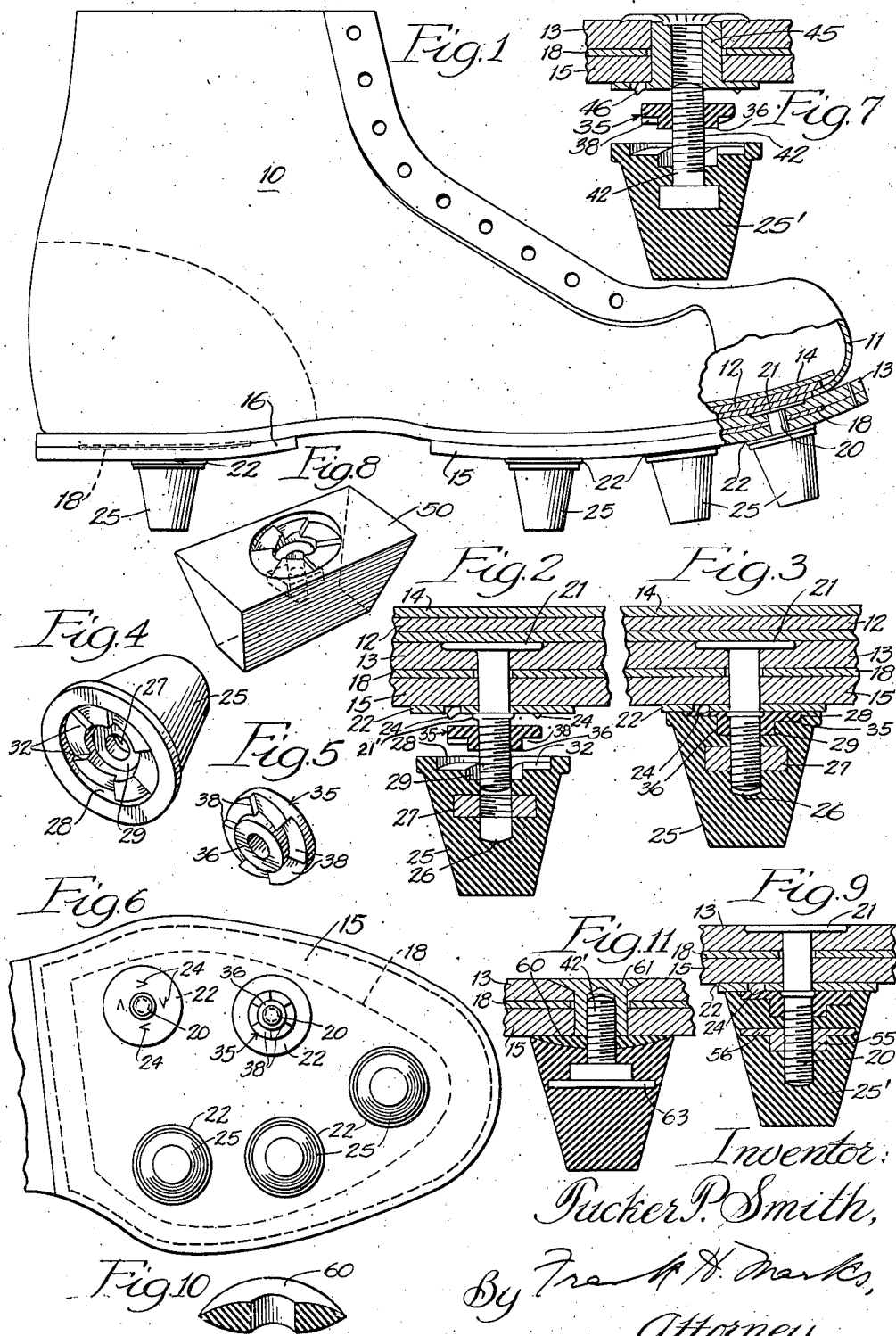
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ATHLETIC SHOE

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ATHLETIC SHOE

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My invention relates to athletic shoes of the cleated type and has to do more particularly with shoes having detachable cleats. My invention is especially applicable to shoes equipped with detachable molded cleats as adapted for the game of football, but is also applicable to other types of cleats.

Shoes of the general type shown in Riddell Patent No. 1,462,625, dated July 24, 1923, have been known and used for a long time, but such shoes have been subject to serious objections in use, primarily because of the fact that they are subject to the accidental backing off of the cleats from their supporting studs, leaving exposed a male metal stud which threatens serious injury to an opposing player. Although shoes of this general type have been known for many years and many efforts have been made to overcome this disadvantage, so far as I am aware, such efforts have been without success prior to my invention. My invention, however, has satisfactorily solved this problem.

An object of my invention, therefore, is to provide a shoe equipped with detachable cleats having securing means which will positively retain the cleats against accidental backing off, while, at the same time, permitting removal of the cleats when desired for replacement, as, for example, when a cleat has become worn or when it is desired to substitute a different type of cleat for a certain condition of playing field.

Still another object is to provide a cleated shoe having simple and inexpensive interlocking means between the cleat and the shoe which will be sufficiently positive to prevent accidental displacement but sufficiently yielding to permit deliberate removal of the cleats when desired.

Another object is to provide a detachable cleat attachment of the type referred to in connection with a square or pyramidal form of cleat.

Various other objects and advantages will become apparent as the description proceeds.

Referring now to the drawing forming a part of this specification and illustrating certain preferred embodiments of my invention:

Fig. 1 is a side elevational view, partly in section, of a shoe equipped with cleats according to my invention;

Fig. 2 is an enlarged sectional view of the cleat and shoe sole, showing the parts in spaced relation, as in process of assembly;

Fig. 3 is a view similar to Fig. 2 but with the parts completely assembled;

Fig. 4 is a perspective view of an improved cleat comprising an element of my invention;

Fig. 5 is a perspective view of a compression member comprising another element of my invention;

Fig. 6 is a plan view showing the bottom of a sole equipped according to my invention showing the parts at various stages of assembly;

Fig. 7 is a view similar to Fig. 3, but showing another embodiment of my invention employing a different form of attachment;

Fig. 8 is a perspective view showing my invention applied to a rectangular type of cleat;

Fig. 9 is a sectional view similar to Fig. 3, showing another feature of my invention;

Fig. 10 is a perspective sectional view of a different form of disc constituting an element of my invention; and

Fig. 11 is a sectional view showing the disc of Fig. 10 in assembled relation.

The numeral 10 represents generally a shoe having an upper 11, an insole 12, an outer sole 13, and a sock lining 14. A sole tap 15 and heel tap 16 are secured to the sole as by stitching, and steel plates 18, 18' may be inserted between the sole and the sole and heel taps, respectively, in accordance with the usual preferred practice.

In one preferred embodiment, headed studs 20 extend through the sole, the heads 21 of said studs being countersunk in the upper face of the sole 13 and the shaft of each stud being upset as at 21' against a metal washer 22 which fits against the bottom of the sole and heel taps, thus clamping the stud in the sole. These washers 22 are preferably provided with tangs 24 struck out from the washers and extending downwardly therefrom.

In the embodiment of Figs. 1-6, there is shown attached to the shoe a plurality of molded conical cleats 25 of rubber, fiber, or the like, having an axial bore 26 with which is aligned a threaded nut 27 or the like embedded in the cleat. The bore 26 communicates with a countersink 28 having a lower restricted portion 29. Within the upper annular portion of countersink 28 is formed one or more beveled or inclined serrations or teeth 32 arranged in pin wheel or ratchet like formation.

Interposed between the cleat 25 and the metal washer 22 is a disc shaped member 35. The member 35 in the form shown has one smooth face which is adapted to be disposed toward the metal washer 22. On its opposite face is an outwardly extending annular shoulder 36 while the annular portion outside of the shoulder 36 is provided with serrations 33 similar to the serrations 32 of the cleat, so that when the cleat

and disc 35 are disposed in assembled relation, as in Figs. 2 and 3, the serrations 32 and 38 will be disposed oppositely or in a position to interlock with each other. The disc 35 is formed of suitable resilient and frictional material. It may be formed of leather or fiber having high frictional and flexible qualities, but I prefer to use material which has also a substantial degree of elasticity, such as rubber, so that when the cleat is screwed up tight against the sole of the shoe, as shown in Fig. 3, the disc 35 will be expanded diametrically as it is compressed. Thus, it will be seen that the member 35 is normally smaller in diameter than the countersink 28 in the upper portion of the cleat but, when expanded under compression, it substantially fills this space, the teeth of the disc being tightly interlocked with those of the cleat so that a considerable force will be required to back off the cleat from the sole. It will also be noted that the tangs 24 struck down from the metal washer 22 bite into the member 35, locking it against rotation.

The serrations 32 and 38 act substantially as a ratchet and pawl in interlocking relation. The number of teeth may be reduced to one, or other desired number, and, instead of opposed teeth, I may provide one or more projections of other suitable form on the opposed member to cooperate with the beveled tooth or teeth. Furthermore, I may provide the ratchet-like teeth on both faces of disc 35, or omit them entirely from this member and provide them on the cleat and washer 22.

While it is impossible for a cleat to be accidentally displaced when attached in accordance with my invention, it will be apparent that it may be removed by a suitable tool when it is desired to replace a cleat with a new one or one of a different type.

In the embodiment of Fig. 7 I have shown my invention as applied to a cleat 25' provided with an attachment in the form of a headed stud 42 embedded in the cleat and adapted to thread into a nut 45 or the like secured in the sole of a shoe. The nut or female member 45 preferably has tangs 46 depending therefrom. Such a cleat may be attached in substantially the same manner as I have described with reference to the other figures. Various other types of cleat attachments may be employed with my invention, the ones disclosed being given merely by way of example. Furthermore, various reversals of parts may be made within the spirit of my invention. Thus, since the disc is distortable, the cooperating projections or serrations in the cleat need not necessarily be beveled similarly to those of the disc, although the arrangement shown gives the best results.

Fig. 8 illustrates my invention as applied to a rectangular type of cleat. Heretofore, although square cleats, i. e., in the form of truncated pyramids, have stood in very high favor, it has been considered possible only to make such cleats of laminated leather and to secure them by nailing to the sole of a shoe. This form of attachment has been considered highly undesirable because of the danger inherent therein of having a number of bare nails extending from a shoe when such a cleat is accidentally wrenched off in play. In other words, it has not been considered practical to use a detachable cleat of the square type because of the fact that previously known attachments have permitted backing off of the cleats, thus leaving the cleat in distorted position whereby a player might wrench his joints

and be seriously injured, besides threatening the safety of opposing players.

Fig. 8 illustrates my invention as applied to a square cleat 50 which is attached in a manner similar to that illustrated in the other figures. It may have either a male or female attachment of any suitable design. In view of the fact that my improved attachment is quite secure against accidental rotation or loosening, I have found that it is now possible to employ detachable square or pyramidal cleats with complete confidence that they will remain securely attached in the proper position under all conditions of play.

Fig. 9 shows another feature which I have found of great value in conical cleat set-ups. Ordinarily, where the cleats are formed of flexible or distortable material, it is found that when the cleats are mounted on the shoe, which operation is usually performed by means of an automatic tool, the force which it is necessary to apply to the cleats in order to screw them up tightly against the shoe sole will distort the cleats from a true conical shape so that they are more or less arcuate in cross sectional contour. This is highly undesirable for many reasons, one reason being that a cleat of such a contour is considerably more dangerous to opposing players than a true frusto-conical cleat.

I have discovered that if there is inserted in the cleat, preferably during the molding operation, a stiff member, as of metal or the like, at a point intermediate the ends, such an insert having an area approximately equal to that of a transverse section of the cleat at the point of insertion, such a member will serve substantially to prevent such distortion.

Referring to Fig. 9, the molded frusto-conical cleat 25' formed of distortable material, such as rubber, has molded therein a threaded member 55, which may be in the form of a nut or the like, and having integral therewith an enlarged flange 56. This flange preferably extends nearly to the conical face of cleat 25'. I have found that such an arrangement substantially prevents distortion of the cleat when it is screwed up with great force against the shoe sole. It will be readily understood, of course, that the distortion preventing device shown in Fig. 9 may take various other forms. For example, it may be applied to a male type of cleat as shown in Fig. 7 (see Fig. 11), in which case the head of the stud 42' has an integral flange 63 which is nearly or approximately equal to the diameter of the cleat at that point.

Figs. 10 and 11 show another form of locking member 60 embodying my invention for preventing backing off of the cleat. I have found that a distortable disc formed of rubber or like elastic material of approximately elliptical cross section will serve effectively to prevent accidental loosening of a cleat. In Fig. 11, I have shown this type of locking member in connection with a specific type of cleat set-up including a female socket member 61 in the shoe sole and a male stud 42' embedded in the cleat. However, this arrangement is given merely by way of example. It will be noted that the upper face of the cleat is slightly dishd, as indicated at 65, and the opposed face of the sole 15 may or may not be similarly deformed. The disc 60, when the cleat is forced up with considerable pressure against the sole, becomes distorted, expanding diametrically and adjusting itself to every irregularity of the opposed surfaces, forming a frictional as

well as an interlocking engagement with the parts. If desired, the cleat may be formed with ratchet teeth 32 or other irregularities which will interlock with the disc.

Although I have illustrated my invention as being particularly adapted for use in connection with football cleats, it will be readily understood that the invention is not restricted to this type of shoe but may be employed with various other types of athletic shoes, such as track, etc.

Various other modifications and variations of my invention may suggest themselves to those skilled in the art without departing from the spirit of my invention, and, hence, I do not wish to be limited to the specific forms shown or uses mentioned, except to the extent indicated in the appended claims, which should be interpreted as broadly as the state of the art will permit.

I claim:

1. The combination with a shoe, of a cleat, and means for detachably securing said cleat to said shoe, comprising interengaging members in the shoe sole and in the cleat, a disc interposed between the cleat and the sole formed of frictional and distortable material, and means on the sole and on the cleat, respectively adapted to distort and interlock with said disc when the parts are assembled, whereby the cleat may not be displaced from the sole except by means of a force greater than that applied under ordinary playing conditions.

2. The combination with a shoe, of a cleat, means for detachably securing said cleat to said shoe comprising interengaging members in the shoe sole and in the cleat, and a disc interposed between the cleat and the sole formed of frictional and distortable material, said disc having on at least one face thereof a plurality of serrations, at least one of said sole and said cleat being provided with means for interlocking with said serrations, and means on the other of said sole and cleat for preventing rotation of said disc.

3. The combination with a shoe having a stud secured to the sole thereof, of a cleat detachably secured to said stud, and a friction element interposed between the cleat and the sole, and means on sole interlocking with said friction element, said friction element being distorted in the process of assembly into positive interlocking relation with said cleat and sole, whereby the cleat may not be displaced by rotary action from the sole except by means of a force greater than that applied under ordinary playing conditions.

4. The combination with a shoe, of a pyramidal cleat, and means for detachably securing said cleat to said shoe, comprising interengaging members in the shoe sole and in the cleat, and a member interposed in interlocking relation between said cleat and sole for preventing accidental rotary displacement of said cleat, said member being formed of frictional and distortable material and being distorted in the process of assembly.

5. A disc designed to be interposed between cleats and a shoe sole to prevent accidental displacement of the cleats, said disc having on at least one face thereof a plurality of serrations, said disc being formed of resilient frictional material whereby it may be distorted into interlocking relation with the contiguous parts when pressure is applied thereto.

6. A disc designed to be interposed between cleats and a shoe sole to prevent accidental displacement of the cleats, said disc having on at least one face thereof a beveled serration, said

disc being formed of resilient frictional material whereby it may be distorted into interlocking relation with the contiguous parts when pressure is applied thereto.

7. A method of producing a detachably cleated shoe, comprising fabricating a shoe and cleats therefor with interengaging members in said parts for detachably securing the cleats to the shoe, said interengaging members including a male and a female part, applying on the male part a disc of frictional and distortable material having on at least one face thereof a beveled serration, and rotatably securing the cleat to the shoe, and in the course of the last mentioned step 10
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distorting said disc by pressure into positive interlocking relation with the sole and cleat.

8. The combination with a shoe, of a cleat, means for detachably securing said cleat to said shoe comprising interengaging members in the shoe sole and in the cleat, and a member interposed in interlocking relation between said cleat and sole for preventing accidental displacement of said cleat, said member comprising a disc of frictional and distortable material.

9. The combination with a shoe, of a cleat, of means for detachably securing said cleat to said shoe, comprising interengaging members in the shoe sole and in the cleat, and a member interposed in interlocking relation between said cleat and sole for preventing accidental displacement of said cleat, said last named member comprising a disc of frictional and distortable material and being approximately elliptical in cross section.

10. In a calk device for attachment to a shoe sole, a calk having a base; a screw member for connecting said calk to the sole; projecting means on said base; and a washer of compressible material intermediate the sole and said base, cooperable with said projecting means to hold said calk against inadvertent rotation.

11. In a calk device for attachment to a shoe sole, a calk having a base; a screw member for connecting said calk to the sole; a metallic washer on said screw member, having gripping means extending toward said base; projecting means on said base; and a washer of compressible material intermediate said first named washer and said base, cooperable with said gripping and projecting means for holding said calk against inadvertent rotation.

12. The combination with a shoe having a cleat attaching element in the sole thereof, of a cleat having threaded means molded therein and cooperating with said element for detachably securing the cleat to the shoe sole, and a member interposed in interlocking relation between said cleat and sole for preventing accidental displacement of said cleat, said member being formed of frictional and distortable material and being distorted in the process of assembly into positive interlocking relation with said cleat and sole, whereby the cleat may not be displaced by rotary action from the sole except by means of a force greater than that applied under ordinary playing conditions.

13. The combination with a shoe having a cleat attaching element in the sole thereof, of a cleat having threaded means molded therein and cooperating with said element for detachably securing the cleat to the shoe sole, and a member interposed in interlocking relation between said cleat and sole for preventing accidental displacement of said cleat, said member being formed of frictional and distortable material and

being distorted in the process of assembly into positive interlocking relation with said cleat and sole, whereby the cleat may not be displaced by rotary action from the sole except by means of a force greater than that applied under ordinary playing conditions, said cleat having a recess in the base thereof to receive said member.

14. In a calk device for attachment to a shoe sole, a calk having a recessed base, a screw member for connecting said calk to the sole, and a washer of compressible material intermediate the sole and said base, cooperable with said base to grip and hold said calk against inadvertent rotation, and being distorted in the process of assembly into positive interlocking relation with said calk and sole, whereby the calk may not be displaced by rotary action from the sole except by means of a force greater than that applied under ordinary playing conditions.

15. In a calk device for attachment to a shoe sole, a calk having a base; a screw member for connecting said calk to said sole; a toothlike element on at least one of said base and said sole; a washerlike member of frictional and distortable material interposed between said calk and said sole, cooperable with said toothlike element to hold said calk against inadvertent rotation.

16. In a calk device for attachment to a shoe sole, a calk having a base; a screw member for connecting said calk to said sole; a toothlike element on at least one of said base and said sole; a washerlike member of frictional and distortable material interposed between said calk and said sole, cooperable with said toothlike element to hold said calk against inadvertent rotation, said calk having a recess in the base thereof to receive said member.

17. In a calk device for attachment to a shoe sole, a calk member having a base, a screw member for attaching said calk to said sole, and a disc-like member disposed between said calk and said sole, each of said disc-like member and said calk base having formed thereon a set of tooth-like elements for interlocking engagement so as to hold the calk against inadvertent rotation, at least one of said sets of tooth-like elements being resilient and each set of tooth-like elements having correspondingly sloping faces permitting ratchet-like overriding of the respective elements, whereby at least a portion of the resilient tooth-like elements will spring into spaces between adjacent tooth-like elements opposed thereto during tightening movement of said calk member toward said disc-like member and sole.

18. In a calk device for attachment to a shoe sole, a calk member having a base, a screw member for attaching said calk to said sole, and a disc-like member disposed between said calk and said sole, said disc-like member and said calk base having formed thereon tooth-like elements for interlocking engagement so as to hold the calk against inadvertent rotation, at least one of said interlocking members being sufficiently resilient to permit yielding and overriding of said elements when the calk is screwed up, said tooth-like elements of said disc member being of a size and shape so that at least a portion thereof will fill a substantial portion of at least some of the spaces between successive tooth-like elements of the calk, so as to produce an intermeshing relationship between the tooth-like elements on the disc member and the tooth-like elements on the calk.

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