

[54] **EXCHANGEABLE GRIPPER ELEMENT**

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[51] Int. Cl.²..... **A43C 15/00**

[58] Field of Search..... **36/67 R, 67 D, 59 R**

[56] **References Cited**

UNITED STATES PATENTS

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Primary Examiner—Patrick D. Lawson

[57] **ABSTRACT**

Exchangeable gripper element for sports shoes, especially studs for football boots, with a threaded extension which can be inserted in an orifice of the outsole of the sports shoe, the threaded extension having a steep thread, in the form of one or more helical ribs or grooves, on its otherwise cylindrical outer surface, and a locking element in the form of a projection or a recess being provided on the threaded extension and/or the support face of the gripper element, which can be snapped into a part of the outsole which is of complementary shape thereto. This provides a gripper element which can be screwed in quickly and is secured against undesired loosening in use.

12 Claims, 4 Drawing Figures

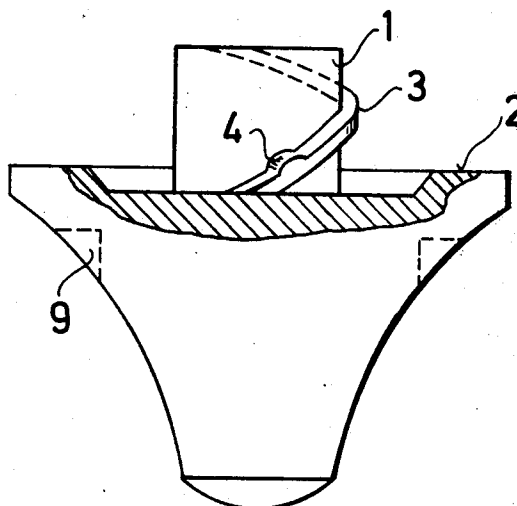


Fig. 1

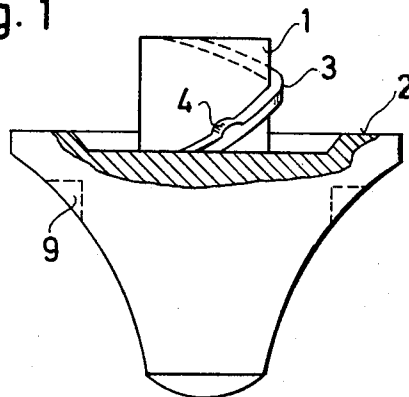


Fig. 2

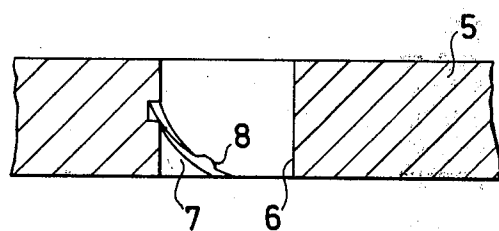


FIG.3

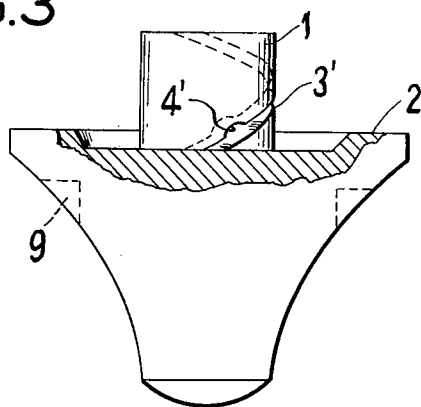
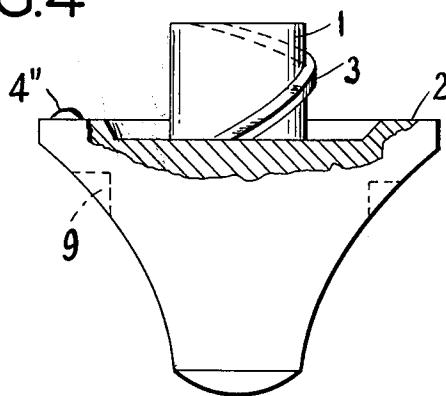


FIG.4



EXCHANGEABLE GRIPPER ELEMENT

The invention relates to an exchangeable gripper element for sports shoes, especially a stud for football boots, with a threaded extension which can be inserted in an orifice of the outsole of the sports shoe.

In copending U.S. patent application Ser. No. 485,815, filed July 5, 1974 there is described a method for the manufacture of a plastics outsole for sports shoes, in which gripper elements which can be inserted exchangeably into the outsole have the plastic of the outsole moulded round them directly during the manufacture of the outsole. The gripper elements used for this purpose consist wholly of plastic and have a threaded extension which serves, during the method of moulding the outsole, as a moulding element for the corresponding internal thread of the orifice into which the gripper element can be screwed. This method permits the particularly simple manufacture, and in particular the fixing, of a gripper element for sports shoes in which it is possible to dispense with the customary threaded extension bearing a screw thread and with the construction of the support face of the gripper element which serves to secure the gripper element against working loose. These conventional threaded extensions not only make the exchange of the gripper elements time consuming but also it is necessary always to ensure, through particularly firm tightening of the gripper elements, that the gripper element cannot work loose of its own accord when the sports shoe is being used. To assist this self-prevention, means to increase friction have already been provided in the support face of the gripper elements.

According to the invention there is provided an exchangeable gripper element for a sports shoe, comprising a body portion of the element having a support face adapted to abut the bottom face of the shoe sole, a threaded extension projecting from said support face, said threaded extension having a cylindrical outer face, a steep thread, in the form of at least one helical element on said cylindrical outer face and locking element, which can be snapped into a part of complementary shape of the outsole.

The "thread" of the "threaded extension" in the gripper element according to the invention is thus limited to one or more ribs or grooves which suitably only extend over a part of the periphery of the threaded extension, for example over half the periphery. Correspondingly, depending on the extent of the rib, substantially fewer turns, in the case mentioned by way of example even only half a turn, are required to screw the gripper element into the outsole of the sports shoe. In addition, a projection is provided on the otherwise cylindrical outer surface of the threaded extension and a recess is provided in the corresponding wall of the orifice in the outsole (or vice versa), and this projection and recess engage in one another after prior local elastic deformation and secure the gripper element against unintentional dropping-out or unscrewing. The conventionally used sole materials for sports shoes, for example nylon, permit sufficient elastic deformation which makes it possible to snap the projection into the recess.

Of course, the present inventive concept can be implemented in principle independently of the manufacturing method according to the U.S. Pat. application Ser. No. 485,815 mentioned above, that is to say the

advantages of rapid replacement, and of securing, of the gripper element can also be achieved without direct moulded round the threaded extension when manufacturing the outsole. However, as is readily appreciated, the production of the orifice in the outsole, into which the threaded attachment of the gripper element must be inserted, becomes disproportionately more difficult and more expensive and hence becomes commercially less competitive. When using the method described in the above application Ser. No. 485,815, it is, on the other hand, not necessary to pay attention either to producing the requisite exact fit of the cylindrical outer face of the threaded extension in the orifice in the outsole, or to the exact matching of the projection which serves as a securing device and of the corresponding recess, (or vice versa), since the gripper element itself moulds the corresponding parts, of complementary shape, of the orifice in the outsole. This also provides a guide, practically free of play, for the cylindrical outer surface of the threaded extension in the orifice in the outsole. This is of particular importance because, in contrast to the conventional threaded extensions, wobbling of the gripper elements in the orifice can no longer be prevented by over-tightening the threads.

The helical rib or ridge serves the purpose of generating, when the gripper element is turned by means of the tools to be provided in the conventional way for this purpose, a force which is correspondingly directed in the screwing or unscrewing direction and by means of which the elastic deformation necessary for snapping the projection into the recess or releasing it from the recess is generated.

In order that the present invention will be fully understood the following description of a preferred embodiment is given, merely by way of example, reference being made to the accompanying drawings, in which:

FIG. 1 is a schematic side view, partly in section, of a stud according to the invention for a football boot; and

FIG. 2 is a section through a portion of an outsole showing an orifice in the outsole, into which the football stud according to FIG. 1 can be inserted.

FIGS. 3 and 4 are schematic side views, partly in section of modifications of the stud of FIG. 1.

The stud according to FIG. 1, has a threaded extension 1, which projects upwards from a stepped support face 2. The threaded extension 1 has essentially a cylindrical outer face, from which a rectangular-section rib 3, which runs helically over 180° of the periphery of the threaded extension, projects outwards. This rectangular-section rib 3 has shortly before its end which merges with the support face 2, a rounded thickened portion 4 which projects from the upper face of the rectangular-section rib 3, in the axial direction of the threaded extension 1.

FIG. 2 shows schematically a portion of an outsole 5 made of plastic, in which is provided an orifice 6 which has a groove 7 which corresponds to the rectangular-section rib 3 of the threaded extension 1. Furthermore, a recess or hole 8 which is complementary to the thickened portion 4 is provided in the groove 7.

When inserting the stud, the threaded extension 1 is placed against the orifice 6 and the stud is turned by means of a tool, which can be applied to the key faces 9 shown in broken lines, so that the rectangular-section rib 3 engages in the groove 7 in the manner of a thread 6 and the threaded extension 1 can be screwed in. After

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slightly less than half a turn, the thickened portion 4 of the rectangular-section rib 3 rests against the lower edge of the orifice 6 and initially prevents further screwing-in. However, by using a higher torque, the part of the groove 7 which adjoins the edge - and possibly also the thickened portion 4 - deforms elastically, so that the stud can be turned a little way further until the thickened portion 4 snaps into the recess 8. In this position, the stud is held securely against unintentional dropping-out or unscrewing. The stud is undone by following the reverse procedure.

The production of the groove 7 with the recess 8, in such a way that the support face 2 can rest flush against the underside of the outsole 5, is advantageously effected, as described at the outset, in accordance with the method described in the abovementioned U.S. Pat. application Ser. No. 485,815 in which the threaded extension 1 is directly embedded, in the mould for the outsole 5, by the plastic of the outsole whilst the plastic is still fluid, so that the extension 1 itself acts as a moulding device. Of course, here again the material of the stud differs from that of the outsole 5 so that the two parts cannot weld together when one is moulded around the other. If appropriate, the threaded extension 1 can additionally be treated with a release agent.

FIGS. 3 and 4 show modifications of the stud of FIG. 1. More specifically, in the embodiment of FIG. 3, the extension 1 is provided with a helical groove 3' having a recess 4'.

In the embodiment of FIG. 4, the locking element 4'' is provided on the support face of the gripper element rather than on the rib 3 as shown in FIG. 1.

I claim:

1. An exchangeable gripper element for a sports shoe, comprising a body portion of the element having a support face adapted to abut the bottom face of a

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shoe sole of a sports shoe, an extension projecting from said support face, said extension having a substantially cylindrical outer face, a steep thread, in the form of at least one helical element, on said substantially cylindrical outer face, and a locking element, which can be snapped into a part of complementary shape of the sole.

2. A gripper element as claimed in claim 1, wherein said locking element is a projection.

3. A gripper element as claimed in claim 1, wherein said locking element is a recess.

4. A gripper element as claimed in claim 1, wherein said locking element is formed on the extension.

5. A gripper element as claimed in claim 1, wherein said locking element is formed on the support face.

6. A gripper element as claimed in claim 1, wherein the helical element is a helical rib.

7. A gripper element as claimed in claim 1, wherein the helical element is a helical groove.

8. A gripper element as claimed in claim 1, wherein the helical element only extends over a part of the periphery of the extension.

9. A gripper element as claimed in claim 1 wherein the locking element is a local formation of the helical element.

10. A gripper element as claimed in claim 1, wherein the locking element is located a short distance from the support face.

11. A gripper element as claimed in claim 1, wherein the local formation of the helical element is formed adjacent one end of the helical element.

12. A gripper element as claimed in claim 1, wherein the locking element has a wedge-shaped butting face at least in the screwing-in direction of the gripper element.

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