

PATENT SPECIFICATION

(11) 1 299 448

DRAWINGS ATTACHED

- (21) Application Nos. 60234/69 (22) Filed 10 Dec. 1969
12395/70 14 March 1970
(23) Complete Specification filed 4 Dec. 1970
(45) Complete Specification published 13 Dec. 1972
(51) International Classification A43B 13/14 21/433
(52) Index at acceptance A3B 14A1B 7C3 8A1



(54) IMPROVEMENTS RELATING TO FOOTWEAR

(71) I, JOSEPH FRANCIS DYMOND, of "Rosendale", Eveswell Park Road, Newport, Monmouthshire, a British Subject, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to footwear, and particularly but not exclusively, to sporting footwear such as football, hockey and like boots, and golf and tennis shoes for example. The invention may also have application to ballroom dancing shoes and other kinds of footwear.

It has previously been proposed to provide a boot or shoe with a set of studs mounted on a plate which is rotatably fixed to the sole, so that when the studs embed in, e.g. turf, the sole can pivot relative to the studs. This enables the wearer to pivot about, e.g. the ball of the foot whilst providing security against slipping. However, when it is attempted to translate this idea into practical articles it is found that either the whole sole is made rigid and inflexible, which is not suitable or convenient for field sports for example, or if the more usual flexibility is retained then turf and mud tend to accumulate between the sole and the plate and either wedge the latter against rotation or make the footwear uncomfortable and impractical.

The object of the invention is to provide a solution to this problem.

In accordance with the invention, an article of footwear has a disc on the sole and/or heel portion, which disc is rotatable with respect to the remainder of the article about an axis generally perpendicular to the sole or heel respectively thereof, the periphery of the disc being bevelled, and the said sole or heel or a base mounting the disc and secured to the sole or heel has a surrounding ring portion of complementary cross-section to the disc periphery to retain the disc therein.

The invention is particularly suitable for lightweight very flexible shoes such as plimsoles, tennis shoes and the like.

In order that the invention may be more fully understood, various embodiments in accordance therewith will now be described by way of example, with reference to the accompanying drawings in which:

Figure 1 is a perspective view of a football boot embodying the invention;

Figure 2 is an enlarged cross-sectional elevation of part of the sole of a tennis shoe showing one embodiment of the rotatable device;

Figure 3 shows an alternative embodiment of the device.

Referring to the drawings, Figure 1 shows an article of footwear in the form of a football or hockey boot 1 for example, having a disc 2 on the sole thereof. The possibility of a further or alternative disc at the heel of the boot is shown in broken lines at 3.

Figure 2 shows an embodiment in which a rotatable sole or heel disc 31 is retained in a recess in a base (or sole or heel) by co-operation of inclined surfaces on the portion 31 and retainer 27 (or sole or heel). A circular groove or channel 43 is formed in said disc. The outer edges of the disc may be deformed to permit insertion of the disc into the recess, and a stiffening ring 44 is then inserted into the groove through an opening 45 so as to fill the groove and prevent flexing of the outer edge and thus removal of the disc. The ring may be arranged to be removed through said opening by means of a suitable extractor.

The disc has a recess (as illustrated) accommodating a boss 52 which journals the disc, but (not shown) the boss and recess can be reversed.

Figure 3 shows a further construction in which a disc is retained within a recess in the sole of an article of footwear by co-operation of inclined edges of the recess and disc. As shown, the sole 46 has a detachable portion 47, for example, in the region adjacent to the toe of the boot, on which a part, for example about one quarter of the periphery of the boot bevelled or inclined surface 48 is formed. When the detachable portion is removed, the rotatable disc can be flexed and inserted through the gap thus

formed into contact with the bevelled surface in the recess, and the detachable portion is then replaced to complete the bevelled edge around the plate and secured in position, as by screws 49 for example. The rotatable disc is thus held captive for rotation as before.

The particular construction shown in Figure 3 is suitable for incorporation in a light article of footwear such as a tennis shoe; in such articles which must be extremely flexible in order to permit the violent large distortions necessary in use, a number of circular concentric grooves 50 may be formed in the rotatable disc to increase its flexibility. A central screw may be used if desired between the rotatable disc and sole or base for added security.

In more rigid articles of footwear such as football boots, the detachable portion may extend towards the periphery of the sole or heel.

The rotatable disc of the footwear may be provided with any convenient form of skid resistant device or formation depending on the type of footwear concerned; for example, studs, spikes ribs or brushes or various combinations thereof may be used.

In those embodiments in which the rear surface of the rotatable disc lies in contact with a similar area of sole or base (as actually illustrated), said disc or the sole or base may be ribbed grooved or otherwise shaped to minimise the area of contact and thus reduce drag.

WHAT I CLAIM IS:—

1. An article of footwear having a disc on the sole and/or heel, which disc is rotatable with respect to the remainder of the article about an axis generally perpendicular to the sole or heel respectively thereof, wherein the periphery of the disc is bevelled, and the said sole or heel or a base mounting

the disc and secured on the sole or heel has a surrounding ring portion of complementary cross-section to the disc periphery to retain the disc therein.

2. An article according to Claim 1 wherein the disc is slotted to increase its flexibility.

3. An article according to Claim 1, or Claim 2, wherein the sole or heel or base member has a circular boss or recess co-operating with a like recess or boss in the disc to journal the same.

4. An article as claimed in any preceding Claim, wherein said disc has a stiffening ring about its periphery.

5. An article as claimed in Claim 4, wherein the stiffening ring is located in a groove formed in said disc and opening to a face thereof remote from the ground contacting face thereof.

6. An article as claimed in Claim 5, wherein said groove opens to a channel which extends to the ground contacting surface for stiffening ring insertion.

7. An article as claimed in any preceding Claim, wherein a portion of the said surrounding ring is comprised of a detachable retainer.

8. A device for use on the sole or heel of an article of footwear substantially as hereinbefore described with reference to Figure 2 or Figure 3 of the accompanying drawings.

9. An article of footwear incorporating a rotatable sole or heel portion substantially as herein described and with reference to Figures 2 and 3 of the accompanying drawings.

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The particular construction shown in Figure 3 is suitable for incorporation in a light article of footwear such as a tennis shoe; in such articles which must be extremely flexible in order to permit the violent large distortions necessary in use, a number of circular concentric grooves 50 may be formed in the rotatable disc to increase its flexibility. A central screw may be used if desired between the rotatable disc and sole or base for added security.

In more rigid articles of footwear such as football boots, the detachable portion may extend towards the periphery of the sole or heel.

The rotatable disc of the footwear may be provided with any convenient form of skid resistant device or formation depending on the type of footwear concerned; for example, studs, spikes ribs or brushes or various combinations thereof may be used.

In those embodiments in which the rear surface of the rotatable discs lies in contact with a similar area of sole or base (as actually illustrated), said disc or the sole or base may be ribbed grooved or otherwise shaped to minimise the area of contact and thus reduce drag.

WHAT I CLAIM IS:—

1. An article of footwear having a disc on the sole and/or heel, which disc is rotatable with respect to the remainder of the article about an axis generally perpendicular to the sole or heel respectively thereof, wherein the periphery of the disc is bevelled, and the said sole or heel or a base mounting

the disc and secured on the sole or heel has a surrounding ring portion of complementary cross-section to the disc periphery to retain the disc therein.

2. An article according to Claim 1 wherein the disc is slotted to increase its flexibility.

3. An article according to Claim 1, or Claim 2, wherein the sole or heel or base member has a circular boss or recess co-operating with a like recess or boss in the disc to journal the same.

4. An article as claimed in any preceding Claim, wherein said disc has a stiffening ring about its periphery.

5. An article as claimed in Claim 4, wherein the stiffening ring is located in a groove formed in said disc and opening to a face thereof remote from the ground contacting face thereof.

6. An article as claimed in Claim 5, wherein said groove opens to a channel which extends to the ground contacting surface for stiffening ring insertion.

7. An article as claimed in any preceding Claim, wherein a portion of the said surrounding ring is comprised of a detachable retainer.

8. A device for use on the sole or heel of an article of footwear substantially as hereinbefore described with reference to Figure 2 or Figure 3 of the accompanying drawings.

9. An article of footwear incorporating a rotatable sole or heel portion substantially as herein described and with reference to Figures 2 and 3 of the accompanying drawings.

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(9715)

Printed in Scotland by Her Majesty's Stationery Office
at HMSO Press, Edinburgh, 1972.

Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY,
from which copies may be obtained.



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