United States Patent [19]

Fox

[11] **3,717,238**

[45] **Feb. 20, 1973**

[54] SKI BOOT TRACTION DEVICE

[76] Inventor: **John E. Fox,** 2316 Woodlawn, Missoula, Mont. 59801

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[21] Appl. No.: **199,346**

Related U.S. Application Data

[63] Substitute for Ser. No. 852,160, Aug. 22, 1969, abandoned.

[52] **U.S. Cl.** **36/61**

[51] **Int. Cl.** **A43c 15/00**

[58] **Field of Search** ..... 36/61, 2.5 R, 1

[56] **References Cited**

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Primary Examiner—Patrick D. Lawson

Attorney—Hyman Berman et al.

[57] **ABSTRACT**

A retractable anti-slip device for a ski shoe consisting of a tubular metal casing transversely embedded in the sole or heel of the shoe, the casing having a longitudinal rotatable camming member therein mounted over a longitudinal plate element provided with depending spurs accessible through openings in the bottom wall portion of the casing and being therefore extensible downwardly from the bottom plane of the sole or heel. The plate member is biased upwardly by springs to retract the spurs. The rotatable camming member has a radial handle element at its end which is accessible by the user for manually operating the camming member.

11 Claims, 6 Drawing Figures

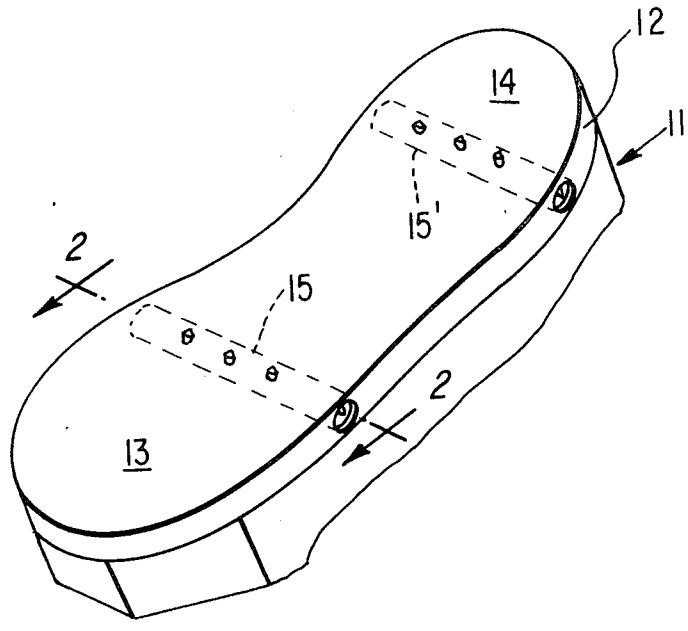


FIG. 1

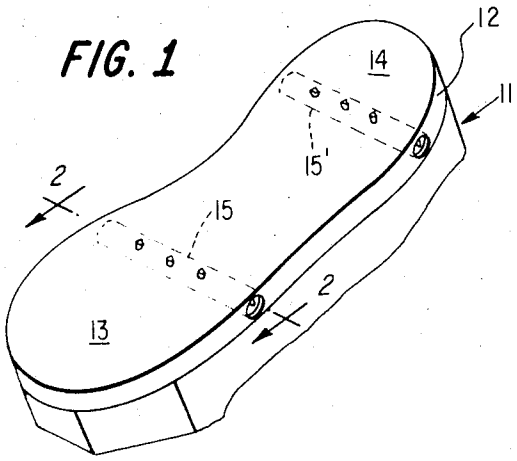


FIG. 4

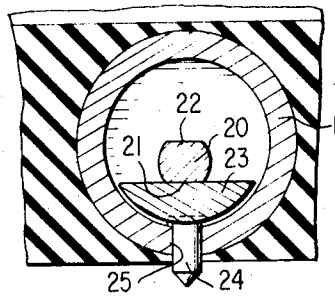


FIG. 5

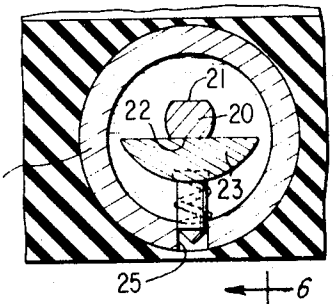


FIG. 2

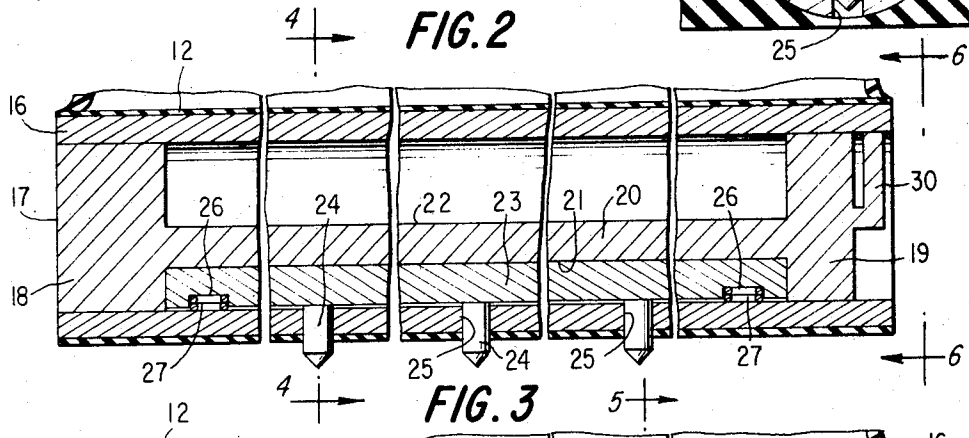


FIG. 3

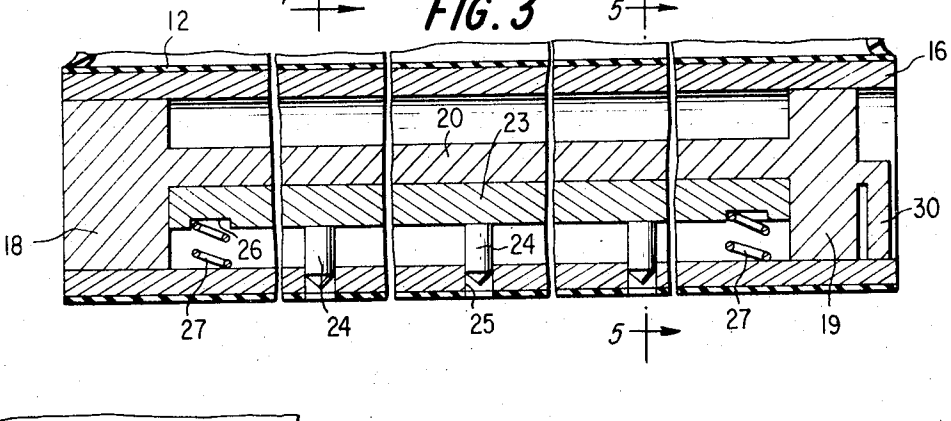
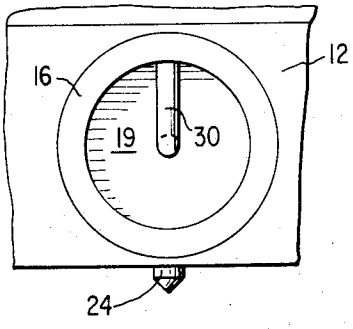


FIG. 6



INVENTOR
JOHN E. FOX
BY Berman, Davidson & Berman
ATTORNEYS

SKI BOOT TRACTION DEVICE

This application is a substitute of Ser. No. 852,160, Aug. 22, 1969.

This invention relates to retractable anti-slip devices for shoes, and more particularly to retractable spur means especially useful with ski boots or similar articles of footwear.

A main object of the invention is to provide a novel and improved anti-slip device for use with ski boots or similar articles of footwear, the device being relatively simple in construction, being very compact in size, being easy to operate, and being completely housed within the portion of the shoe or boot with which it is employed when in its retracted condition.

A further object of the invention is to provide an improved retractable anti-slip device for use in ski shoes or similar articles of footwear, the device being inexpensive to manufacture, being durable in construction, and involving a minimum number of parts. Further objects and advantages of the invention will become apparent from the following descriptions and claims, and from the accompanying drawings, wherein:

FIG. 1 is a perspective view of the bottom of a typical ski boot equipped with anti-slip devices according to the present invention in its sole and heel portions.

FIG. 2 is an enlarged fragmentary, transverse vertical cross-sectional view taken substantially on the line 2 — 2 of FIG. 1.

FIG. 3 is a longitudinal fragmentary cross-sectional view similar to FIG. 2, but shown with the spur elements of the anti-slip device in retracted positions.

FIG. 4 is a transverse vertical cross-sectional view taken substantially on line 4 — 4 of FIG. 2.

FIG. 5 is a transverse vertical cross-sectional view taken substantially on line 5 — 5 of FIG. 3.

FIG. 6 is a fragmentary and elevational view taken substantially on line 6 — 6 of FIG. 2.

Referring to the drawing, 11 generally designates a ski boot provided with a bottom ground-engaging portion 12 having the sole part 13 and the heel part 14, as shown in FIG. 1. The shoe or boot 11 is of conventional construction and merely illustrates a typical article of footwear with which the anti-slip device of the present invention may be employed.

In the typical boot 11 of FIG. 1 there are installed, in accordance with the present invention, respective anti-slip devices designated generally at 15 and 15', said slip devices being installed in the sole part 13 and in the heel part 14, as illustrated. The anti-slip devices 15 and 15' are substantially identical in construction and, therefore, the following description will be devoted only to the anti-slip device 15, it being understood that the structure of the device 15' is substantially identical.

Referring now to FIGS. 2 to 6, it will be seen that the device 15 comprises a cylindrical metal casing 16 of suitable rigid material, such as metal, transversely embedded in the member 12, for example, in the sole part 13 as illustrated in FIG. 1, with its opposite ends exposed at the respective opposite side edges of member 12. Rotatably mounted in the casing 16 is a longitudinal rotatable camming member, designated generally at 17, having the opposite substantially cylindrical head portions 18 and 19 which are integrally connected by an eccentrically located longitudinally extending reduced rod-like cam portion 20. As shown in FIGS. 4 and 5, the eccentrically located longitudinally extending cam rod 20 is of generally originally circular cross-sectional shape which is formed with top and bottom longitudinal slats 21 and 22. Disposed beneath and being substantially co-extensive in length with the rod-like camming member 20 is a segment-shaped, longitudinally extending plate member 23 whose bottom surface has substantially the same radius of curvature as the head portions 18 and 19 of member 17 and which is conformably receivable against the bottom wall portion of casing 16, for example, in the position thereof shown in FIG. 4. Member 23 is provided with a plurality of longitudinally aligned and substantially uniformly spaced depending pointed spurs 24 which are disposed in correspondingly spaced apertures 25 provided in the bottom wall portion of casing 16. At its opposite end portions the bottom surface of plate member 23 is formed with sockets or recesses 26, 26 receiving the top turns of respective coil springs 27, 27 which bear on the inside wall surface of casing 16 and thereby bias the plate member 23 upwardly, namely, toward the position wherein the spurs 24 are retracted, as shown in FIGS. 3 and 5. As is clearly shown in FIG. 5, under these conditions, the top surface of the plate-like member 23 bears against the flat surface 22 of the rod-like camming member 20, said camming member being in its elevated position, as compared with FIG. 4.

When the rod-like camming member 20 is rotated through an angle of 180° to a position thereof shown in FIG. 4, the spur members 24 are in their extended positions, and the plate-like member 23 is engaged by the flat surface 21 of member 20.

It will, therefore, be seen that when the radial handle arm 30 is in the position of FIG. 3, the spur elements 24 are retracted and do not protrude from the surface of member 12 of the shoe. The shoe can, therefore, be employed in the usual manner without any anti-slip action. When the user encounters slippery or icy conditions in which positive foot traction is necessary, he can provide this by rotating the radial handle elements 30 of the devices 15 and 15' to the positions thereof corresponding to FIG. 2, thereby camming the elements 23 downwardly because of the eccentricity of the members 20, thereby moving the members 23 downwardly to the positions shown in FIG. 4 against the compression of the springs 27, the rod elements 22 being locked in such positions by the engagement between the flat top surfaces of the members 23 and the flat surfaces 21 of the rod elements 20. This locking cooperating between the flat surfaces 21 and the flat top surfaces of the members 23 maintains the spur elements 24 in extended positions, such as shown in FIG. 2, against the compressive force exerted by the springs 27. Manual torque applied to the members 18 is required in order to overcome said locking action.

To restore the spur elements to retracted positions, it is, therefore, merely necessary to rotate the arms 30 back to the positions, shown in FIG. 3, whereby the expansions of the springs 27 restore the plate elements 23 to elevated positions such as those illustrated in FIG. 5. The expanded springs 27 hold the flat top surfaces of the members 23 lockingly against the flat surfaces 22 of the rod-like cam members 20, as shown in FIG. 5.

It will thus be readily apparent that whenever it is desired to extend the spur elements 24 to obtain desired traction, for example, when the user is

travelling on ice or similar slippery surfaces, it is merely necessary to rotate the arms **30** from their normal positions, corresponding to FIG. 3, 180° to positions corresponding to FIG. 2, which causes the spur elements **24** to become extended and to provide the desired improved traction.

While the specific embodiments illustrated in the drawing and described above employ the anti-slip devices **15** and **15'** transversely-mounted in the sole and heel portions of the boot **11**, it will be readily apparent that such devices may be employed in any other desired portions of the ground-engaging parts of articles of footwear, and may have any desirable orientation.

While a specific embodiment of an improved anti-slip device for use with an article of footwear has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined in the scope of the appended claims.

I claim:

1. In combination, an article of footwear having a ground-engaging portion, a tubular casing mounted horizontally in said ground-engaging portion, a plurality of depending spur elements mounted in said casing, a cam member rotatably mounted in said casing and having an axial free-extending eccentrically located abutment element drivingly engageable with said spur elements responsive to the rotation of the cam member, and said casing and ground-engaging portion being apertured to allow the spur elements to protrude from said ground-engaging portion when driven by said cam member.

2. The structural combination of claim **1**, wherein said spur elements are mounted on an elongated plate element disposed longitudinally in said casing, and said abutment element is drivingly engageable with said plate element.

3. The structural combination of claim **2**, and wherein said abutment element comprises an axially extending rod-like reduced intermediate portion forming part of the cam member.

4. The structural combination of claim **3**, and wherein at least one end of the casing extends adjacent an edge of the ground-engaging portion, and wherein said cam member is provided with a handle element exposed for operation at said one end of the casing.

5. The structural combination of claim **4**, and wherein said casing and ground-engaging portion are formed with registering apertures in which said spur elements are slidably received.

6. The structural combination of claim **5**, and spring means biasing the plate element upwardly toward contact with said rod-like intermediate portion of the cam member.

7. The structural combination of claim **6**, and wherein said plate element has a flat top surface portion and said rod-like intermediate portion has at least one longitudinally extending flat surface engageable with said flat top surface portion.

8. The structural combination of claim **7**, and wherein said rod-like intermediate portion has diametrically opposed longitudinally extending flat locking surface engageable with the flat surface of the plate elements.

9. The structural combination of claim **8**, and wherein said cam member has respective cylindrical opposite end portions rotatably engaging in said casing.

10. The structural combination of claim **9**, and wherein said tubular casing is mounted substantially transversely in said ground-engaging portion.

11. The structural combination of claim **10**, and wherein said handle element comprises a radially extending arm rigidly carried by one of said cylindrical end portions at its outer side, said outer side being sufficiently inwardly spaced from the adjacent end of the casing to substantially house the arm within the casing.

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