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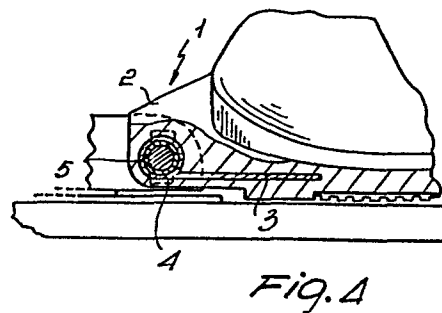
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54 **Ski boot toe ferrule particularly for cross-country ski boots.**

57 The toe ferrule (1) comprises a foil (3) having a cylindrical seat (4) accommodated in a small block (2) carried forwardly on a ski boot. The cylindrical seat (4) is adapted for being engaged by engagement elements, for coupling the toe ferrule (1) to a ski binding.



"SKI BOOT TOE FERRULE PARTICULARLY FOR CROSS-COUNTRY
SKI BOOTS"

This invention relates to a ski boot toe ferrule particularly for cross-country ski boots.

Known are several types of ferrules for cross-country skiing boots which generally comprise a small
5 block carried forwardly on the boot and supporting a pair of metal pegs or inserts in a variety of configurations for engagement with the ski bindings.

Usually such metal pegs or inserts have different shapes to meet the skier's own requirements, and this
10 in order to provide improved convenience and better utilization of the skier's exertion on the skis.

There are metal pegs or inserts which do not allow the boot to pivot about the attachment point of the boot to the ski binding, thereby the sole of the
15 boot is deformed elastically during the striding and boot flexing movements performed by the skier.

There are also metal pegs or inserts which permit only partial rotation of the boot about the attachment point with successive flexing of the sole.

20 In practice, a skier will select the type of ski bindings in conformity with personal preferences and the conditions which he/she is expecting to meet while skiing.

However, such prior toe ferrules are not devoid of drawbacks, such as total dependence upon the type
25 of bindings to which the boot is to be mounted.

Another drawback is that the toe ferrule cannot be re-used in the event of it, or a single one of the metal pegs or inserts, being accidentally broken, or wearing out.

It is a primary object of this invention to provide a toe ferrule for attaching the boot to the ski which is not compulsorily related to the type of ski bindings to be adopted, thereby allowing a wider choice for the skier, which best suits his/her preferences and demands.

Another object of the invention is to enable worn out or broken metal pegs or inserts to be replaced with new metal pegs or inserts without incurring the necessity to replace the whole toe ferrule or even the whole ski boot.

These and other objects are achieved by a ski boot toe ferrule particularly for cross-country skis, characterized in that it comprises a cylindrical seat defined in a small block carried forwardly on the ski boot and pivotally accommodating therein a small internally threaded cylinder having a substantially perpendicular axis with respect to the longitudinal axis of the boot and lying parallel to a plane defined by the top face of the ski for releasable engagement with metal pegs or inserts adapted for coupling with various ski bindings.

Further features and advantages will become apparent from the detailed description of a toe ferrule according to the invention, with reference to the accompanying illustrative drawing, where:

Figure 1 is a partly sectional top plan view of a toe ferrule according to the invention;

Figure 2 is an example of different configuration pegs which may be carried on a toe ferrule according

to the invention;

Figure 3 is a partly sectional side view of a toe ferrule according to the invention, with a fragmentary view of the ski binding;

5 Figure 4 is a partly sectional side view of a toe ferrule according to the invention showing the movement during the stride;

Figure 5 is a plan view of a toe ferrule with a U-like element partly embedded therein;

10 Figure 6 is a perspective side view of a toe ferrule according to the invention having enhanced flexibility; and

Figure 7 is a perspective side view of the same toe ferrule of Figure 6, according to the invention,
15 during the flexing thereof.

With reference to the drawing figures, a toe ferrule according to the invention, generally designated with the reference numeral 1, comprises a small block 2 of an elastically deformable
20 material which is carried forwardly on a ski boot.

Internally of the block there may be noticed a foil 3 which at an end portion thereof, has a cylindrical seat 4 according to the invention.

This cylindrical seat has an axis which extends
25 substantially perpendicular to the boots' longitudinal axis and parallel to the top face of the ski, it being adapted for accommodating, according to the invention, a small cylinder or barrel 5 which is rotatable about its own axis relatively to the cylindrical seat.

The cylinder 5 has two threaded portions 6a and 6b, respectively, on its interior, which portions extend from each end of the cylinder 5, towards the centre portion thereof.

5 Advantageously, of the two threads, one is right-handed and the other left-handed to facilitate opposite threading in of the metal pegs or inserts 7, when the block 2 has been introduced into a ski binding, including lateral walls 100 having axially aligned holes formed
10 therein for introduction of the threaded portions of said metal pegs or inserts, for threaded engagement with said threaded portions of said cylindrical seat.

 Further, and as shown in Figure 5, the toe ferrule of this invention may carry a substantially U-like
15 element 8 which has a straight portion 9 partly embedded in the small block 2. This straight portion 9 extends along a direction extending substantially perpendicular to the boot longitudinal axis and parallel to the ski top face, it having its ends overhanging the side faces
20 of the block 2 on opposite sides thereof. From the ends of this straight portion there extend two co-directional arms 10a and 10b which are equidistant from the side faces of the block 2 and have their free ends connected to the boot sole. Each of the ends of the
25 straight portion supports a bushing 11 rotatably thereon which releasably engages with the ski binding.

 Advantageously, the block 2 defines a first dimension, as measured parallel to the axis of the cylindrical seat, which is substantially equal to that
30 of the ski binding seat which is adapted to receive it,

and a second dimension, measured perpendicularly to the plane defined by the boot sole, which is substantially larger than $1/3$ of the first dimension.

The ferrule 1, moreover, may have at the top thereof
5 a recess 12 which extends in a substantially perpendicular direction to the longitudinal axis of the boot, and at the bottom, an inclined surface adapted for utilizing, during the first portion of the stride, the rotation of the ferrule relatively to the binding
10 and subsequently the flexing of the ferrule itself as shown in Figure 6.

The operation of the inventive ferrule will be apparent from the foregoing description.

Depending upon the bindings carried on the skis,
15 metal pegs or inserts are selected for threading into the cylinder 5. Thus, irrespective of the binding types, there will always occur a partial rotation of the boot and subsequent flexing of the ferrule.

In the event of even a single peg or insert
20 wearing out or becoming broken, it would be sufficient to unthread the damaged peg and replace it with a new one.

It has been found in actual practice that a toe ferrule according to the invention enables one and the
25 same boot to be used with different bindings for cross-country skis by merely replacing either both pegs or one insert.

In practicing the invention, the materials used and the dimensions may be any selected ones contingent
30 on requirements and the state of the art.

CLAIMS

1 1. A ski boot toe ferrule particularly for cross-
2 country ski boots, characterized in that it comprises
3 a cylindrical seat (4) defined in a small block (2)
4 carried forwardly on the ski boot and accommodating
5 therein a small internally threaded cylinder (5)
6 having a substantially perpendicular axis with
7 respect to the longitudinal axis of the boot and lying
8 parallel to a plane defined by the top face of the ski
9 for releasable engagement with metal pegs or inserts (7)
10 adapted for coupling to various ski bindings.

1 2. A ski boot toe ferrule according to claim 1,
2 characterized in that said cylindrical seat (4) is
3 carried on an insert embedded in the boot toe portion.

1 3. A ski boot toe ferrule according to claim 1,
2 characterized in that said small cylinder (5) has two
3 threaded portions (6a,6b) on its interior each extend-
4 ing from one end of said small cylinder (5).

1 4. A ski boot toe ferrule, characterized in that
2 said two threaded portions (6a,6b) have oppositely
3 handed threads.

1 5. A ski boot toe ferrule according to one or
2 more of the preceding claims, characterized in that it
3 comprises a substantially U-like element (8) having
4 a straight portion (9) partly embedded in said small
5 block (2) and extending along an axis which lies sub-
6 stantially perpendicular to the boot longitudinal axis
7 and substantially parallel to said top face of the ski.

1 6. A ski boot toe ferrule, according to one or
2 more of the preceding claims, characterized in that

3 said substantially U-like element (8) has two arms
4 (10a,10b) extending from the ends of said straight
5 portion (9) in parallel with the side faces of said
6 small block (2) and having their free ends connected
7 to the boot sole.

1 7. A ski boot toe ferrule, according to one or
2 more of the preceding claims, characterized in that
3 it comprises a pair of bushings (11) each in pivotal
4 engagement with one of the ends of said straight portion
5 (9) protruding from said small block (2).

1 8. A ski boot toe ferrule, according to one or
2 more of the preceding claims, characterized in that
3 said small block (2) has a first dimension, measured
4 parallel to the cylindrical seat (4) axis, which is
5 substantially equal to the dimension of the seat in
6 said ski binding which receives it, and a second
7 dimension, measured perpendicularly to the plane
8 defined by the ski boot sole, which is substantially
9 greater than $1/3$ of said first dimension.

1 9. A ski boot toe ferrule, according to claim 1,
2 characterized in that said small block (2) has at
3 the top a recess extending in a substantially parallel
4 direction to the axis of said cylindrical seat (4).

1 10. A ski boot toe ferrule, according to one or
2 more of the preceding claims, characterized in that
3 said small block is made of an elastically deformable
4 material.

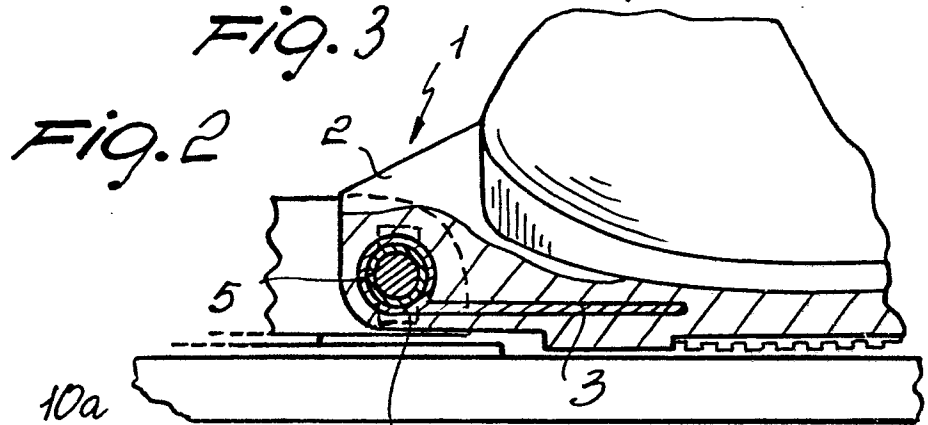
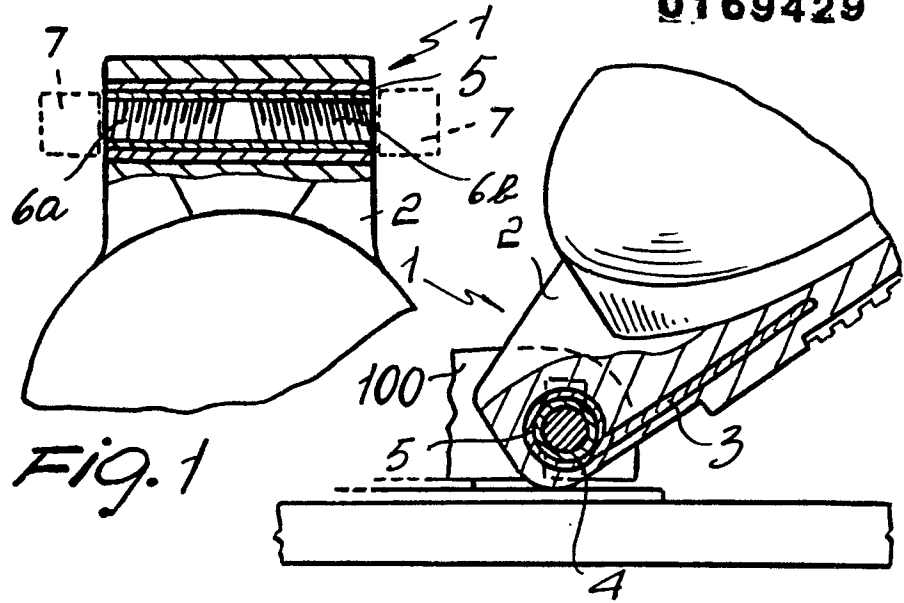
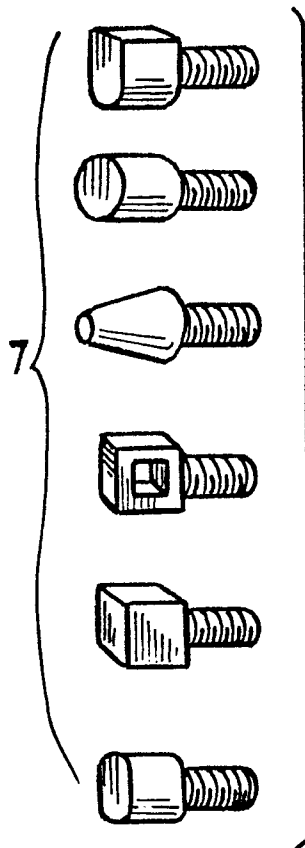
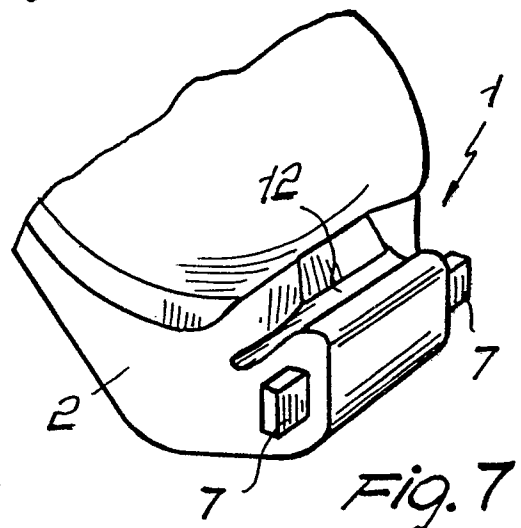
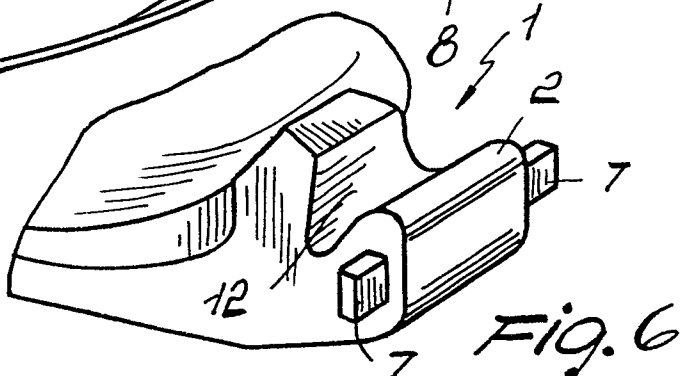
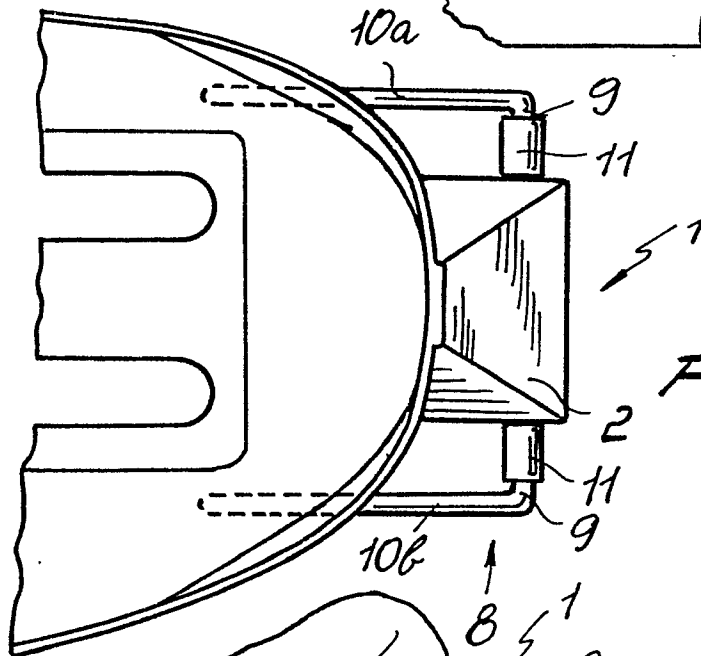


Fig. 3

Fig. 4





European Patent
Office

EUROPEAN SEARCH REPORT

0169429
Application number

EP 85 10 8439

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
A	FR-A-2 306 721 (ADIDAS) * Claims 1,2; figures 1-4 *	1-4, 8-10	A 43 B 5/04
A	DE-A-3 015 052 (BLIZZARD) * Page 6, lines 18-23; page 7, lines 6-8, 5-17; figures 1,2 *	1-4, 8-10	
A	FR-A-2 443 814 (F. SALOMON) * Figure 3 *	5-7	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl. 4)
			A 43 B
Place of search THE HAGUE		Date of completion of the search 16-10-1985	Examiner MALIC K.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			