

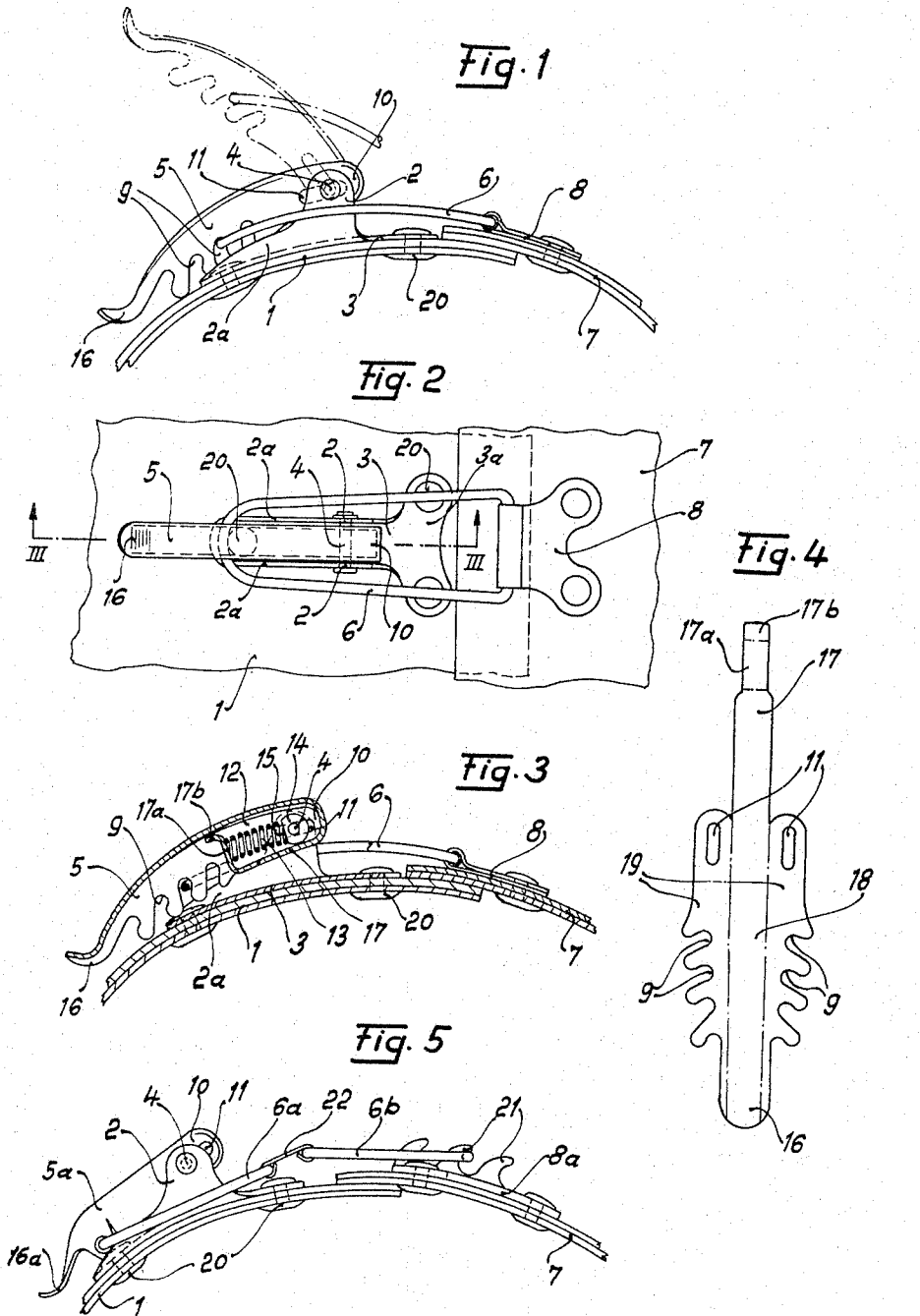
Aug. 1, 1967

C. LUBIAN

3,333,301

FASTENING DEVICE FOR SKI BOOTS

Filed Nov. 15, 1965



INVENTOR.

CLAUDIO LUBIAN

BY

Woodhams, Blanchard & Flynn
ATTORNEYS

1

2

3,333,301

FASTENING DEVICE FOR SKI BOOTS

Claudio Lubian, Padova, Italy, assignor to TOBA Industria Veneta Minuterie Metalliche Saremola di Rubano, Padova, Italy, a corporation of Italy

Filed Nov. 15, 1965, Ser. No. 507,737

Claims priority, application Italy, Jan. 21, 1965, 1,562/65
9 Claims. (Cl. 24-70)

The invention relates to a fastening device for boots, particularly for ski and mountaineering boots, consisting of a base plate having a bearing block and being connected to one side of the instep part of the shoe, of a tensioning lever positioned in the bearing block and being pivotal on a bearing pin, and of a connector which engages at one end with the tensioning lever and at the other end is fastened to the support plate, said latter being connected with the other side of the instep part of the shoe.

The purpose of the invention is to provide a fastening device of said construction where the tensioning lever can be closed easily over its dead center position without a strong, unpleasant pressure on the instep of the foot and wherein said device is resilient in closed condition to allow a certain movement of the foot in the shoe during walking. The invention accomplishes this by means of slots located at the pivoted end of the tensioning lever aligned in the direction of its lengthwise axis through which extends the bearing pin which is mounted on the bearing block and by a resilient member arranged in a chamber at the pivoted end of the tensioning lever aligned in direction of the lengthwise axis of said tensioning lever, said resilient part being at one end supported by the bearing pin and on the other side supported by the tensioning lever.

Said construction has various advantages. During closing of the tensioning lever resilient part stretches so that the dead center position of the tensioning lever can be reached easily. Upon compressing of the resilient member, the effective part of the tensioning lever is at such time shortened through its displacement toward said bearing pin. In the dead center position, the compression of the resilient part, and with it the force applied by same during the closing, reaches its maximum. The resilient part which is positioned in a chamber at the pivoted end of the tensioning lever and aligned along the lengthwise axis of such lever effects a limitation of the closing power of the closing device on the instep on one side and effects a limitation of the closing power applied by hand on the other side. By this, an over stress of the leather comprising the instep part of the shoe is avoided. When the fastening device is closed, the resilient member stretches to allow some movement of the foot in the shoe.

A further particular advantage is that the force component being applied by the tensioning lever at the beginning of a closing operation by the resilient part onto the bearing pin is very small perpendicularly to the surface of the leather comprising the instep part of the shoe. By this, a probable painful pressure onto the foot of the person wearing the shoe is avoided. The force applied, during compression of the resilient member, onto the bearing pin increases during the closing of the tensioning lever, however, the line of application of said force is applied always in the direction of the lengthwise axis of the tensioning lever and at the same time in direction of the slots, so that a favorable path of force occurs by avoiding a friction loss and the pressure on the instep is relatively low.

Further advantages together with details of the invention are explained in the following description and by the examples shown in the drawings:

FIGURE 1 is a side view of a fastening device with the

tensioning lever shown in closed position by solid lines and shown in a partially closed position in broken lines.

FIGURE 2 is a top view on the fastening device according to FIGURE 1.

FIGURE 3 is a cross-sectional view of the fastening device as taken along the lines III—III of FIGURE 2.

FIGURE 4 is a top view of the blank from which the tensioning lever according to FIGURES 1-3 is made.

FIGURE 5 is a side view of a further form of construction of the fastening device according to the invention.

A base plate 3 having a bearing block 2 is connected with the side 1 of the leather pieces comprising the instep of the shoe. A tensioning lever 5 is positioned pivotally by means of a bearing pin 4 in the bearing block 2. A connector 6 engages at one end with the tensioning lever and at the other end with a support plate 8 which is in turn connected with the other side 7 of the instep part of the shoe. In the embodiment shown in FIGURES 1-3, the connector 6 is positioned with one end held within the support plate 8 while its other end is received within a recess 9 of the tensioning lever 5, which is provided, as known, with various recesses 9.

According to the invention, slots 11 are provided at the pivoted end 10 of the tensioning lever 5, in which is positioned the bearing pin 4 which latter is tightly connected to the bearing block 2. Furthermore, the pivoted end 10 of the tensioning lever 5 is provided with a chamber 12 where a resilient member is affixed along the lengthwise axis of the tensioning lever 5. Said spring is self-supported at one end by the bearing pin 4 and at the other side by the tensioning lever 5. The mounting of the resilient member 13, according to the invention, lengthwise of the tensioning lever guarantees that all forces applied by the tensioning lever in the direction of its lengthwise axis onto the bearing pin 4 are taken up by the resilient member independently of the particular position of the tensioning lever (see FIGURE 1, for instance, the position of the tensioning lever in broken lines).

The resilient member 13 which is constructed effectively as a coil spring advantageously is not directly supported by the bearing pin 4 but, for instance, by means of a cylindrical bushing 14. Said bushing is provided with a hole for reception of the bearing pin and is placed rotatably on same. The bushing preferably is made of plastic and is provided at its periphery with a flat surface 15 to support the spring. The bushing 14 rotates correspondingly to the movement of the tensioning lever 5 so that the lengthwise axis of the spring 13, or, better, the line of application of the force applied by same, always goes through the bearing pin 4.

FIGURE 4 shows an advantageous construction of the tensioning lever shown in FIGURES 1-3. An elongated metal blank is at one narrow edge provided with a holding tongue 16 and at the other narrow edge provided with a bar 17. Said latter is provided with side parts 19 on the length-wise edges of the back part 18. Said side parts are in turn provided with recesses 9 in the portion adjacent the holding tongue and openings 11 in the portion adjacent the bar, whereby the latter, vertically offset side parts with the return bent bar 17 constitute the chamber 12 for the reception of the spring 13. The bent in and tapered end 17a of the bar, according to FIGURE 3, forms the support for the spring 13 by the tensioning lever. The end 17b of the bar is affixed to the back part 18 of the tensioning lever preferably by means of spot welding.

The base plate 3, according to FIGURE 2, is advantageously of a T-shaped construction, whereby the cross bar 3a of the T is arranged adjacent the instep of the shoe. This has the advantage that the pressure force,

which results from the closing and which is applied to the bearing pin 4, can be supported over a larger surface on the instep part of the shoe and with this on the foot. This arrangement of the cross bar 3a of the T effects a reduction in pressure towards the instep of the shoe and, consequently, onto the foot of the wearer.

Furthermore, the cross part of the T-shaped base plate increases the moment of resistance of the fastening device in comparison to forces which act parallel to the instep part of the shoe and vertically to the tensioning lever. The fastening of the base plate to the instep part of the shoe is done in usual fashion by rivets 20. Furthermore, according to the invention, the base plate 3, punched out from metal, is provided with wing-like projections, which are constructed in such a way that by a right angular bending of same there are formed the bearing block 2 and the reinforcement flange 2a, said latter extending almost to the end of the plate. Said reinforcement flanges not only improve the stability of the base plate against the lifting and pressure forces which tend to bend same, but they also provide a side support for the tensioning lever in closed position so that irregular forces which act parallel to the bearing pin (for example, when the tensioning lever gets stuck because of a root), are met by a higher resistance without damage by bending of the bearing pin and the bearing block.

A further construction of the invention, shown in FIGURE 5, is a tensioning lever 5a which is not provided with recesses for engagement of a rod to adjust for any desired tensioning of the fastening device. Instead, the support plate 8a which is connected with the part 7 of the instep part of the shoe is provided with toothlike projections 21 into which selectively a bearing unit consisting of two parts 6a and 6b is mounted by means of a member 22. Thereby the part 6a of the bearing rod is pivoted closely to the holding tongue 16a of the tensioning lever 5a. The further construction of said form is the same as the first described construction of the invention.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A fastening device for boots, particularly for ski and mountaineering boots, comprising:
 - a base plate connected to one side of an instep portion of a boot and having a bearing block fixed with respect thereto;
 - a bearing pin extending transversely through said block and held against movement, other than pivotal movement, with respect thereto;
 - an elongated tensioning lever having near one end thereof slot means which is elongated in a direction lengthwise of said lever, said bearing pin extending through said slot means for mounting said lever for pivotal movement with respect to said bearing block;
 - a support plate connected to the other side of the instep portion of the boot;
 - a connector extending between said support plate and

said tensioning lever at a position spaced from said slot means toward the other end of said lever; a resilient member one end of which is in force-transmitting relation with said bearing pin, the other end of which is in force-transmitting relation with said tensioning lever for urging said lever in a lengthwise direction away from said pin.

2. A fastening device as defined in claim 1, in which said lever has a chamber between said slot means and said other end of said lever, said resilient member being housed in said chamber, said chamber extending lengthwise of said lever.

3. A fastening device as defined in claim 1, in which said resilient member is a spring.

4. A fastening device as defined in claim 1, including a cylindrical bushing mounted on said bearing pin and having a flat surface against which one end of said resilient member abuts.

5. A fastening device as defined in claim 2, in which said tensioning lever is of substantially channel-shaped cross-section and comprises a pair of side parts extending transversely from the central web thereof, said side parts having spaced-apart recesses for receiving said connector, said side parts defining the sides of said chamber and means mounted on said lever for defining the bottom and ends of said chamber.

6. A fastening device as defined in claim 5, in which said tensioning lever has a strap at one longitudinal end thereof, the strap being bent under said bearing pin, then extending lengthwise of said tensioning lever and then being bent up toward said web to form the bottom and ends of said chamber.

7. A fastening device as defined in claim 6, in which said strap has a bar extending lengthwise of said lever and fastened to the underside of said web by welding.

8. A fastening device as defined in claim 1, in which the base plate is of substantially T-shape in plan view with the cross-bar of said plate extending transverse to said tensioning lever.

9. A fastening device as defined in claim 8, in which said base plate has edge portions along the stem of said plate which are bent upwardly from the plane of said plate to provide ears forming said bearing block and lengthwise extending reinforcing flanges.

References Cited

UNITED STATES PATENTS

2,001,216	5/1935	Sand	24-71
3,163,900	1/1965	Martin	24-70
3,258,820	7/1966	Steinberg	24-70

FOREIGN PATENTS

1,366,146	6/1964	France.
-----------	--------	---------

WILLIAM FELDMAN, *Primary Examiner*.

MILTON S. MEHR, *Examiner*.