

Sept. 3, 1968

F. MARCH

3,399,430

BUCKLE, PARTICULARLY FOR A SKIING BOOT

Filed March 15, 1967

2 Sheets-Sheet 1

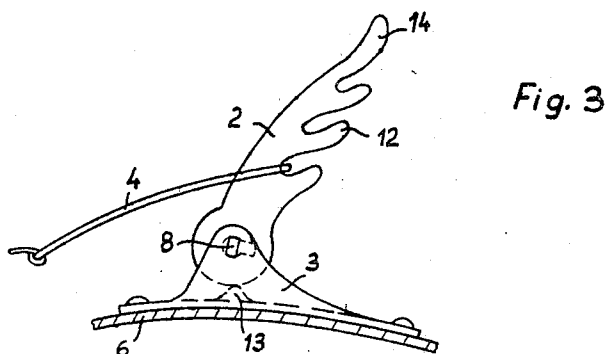
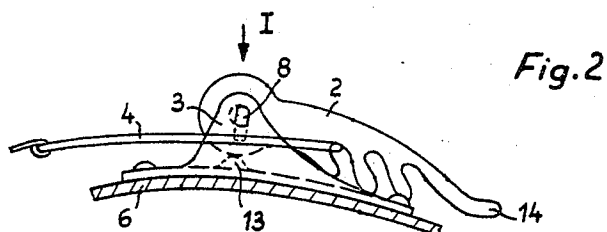
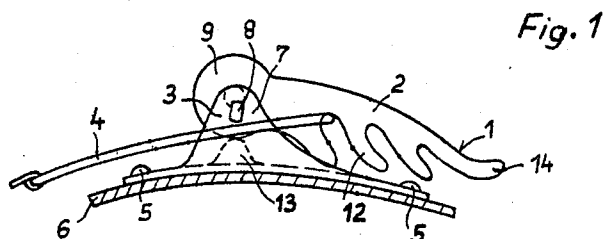


Fig. 4

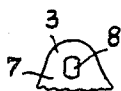
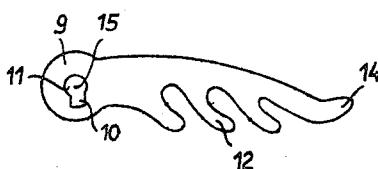


Fig. 5



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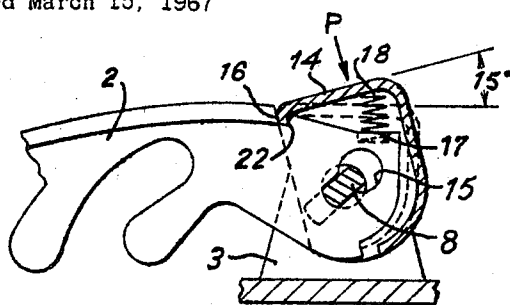


Fig. 6

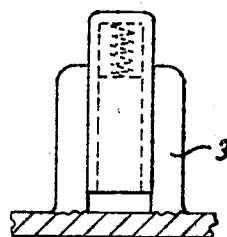


Fig. 7

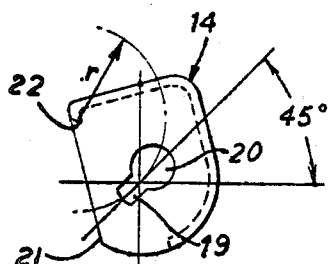


Fig. 8

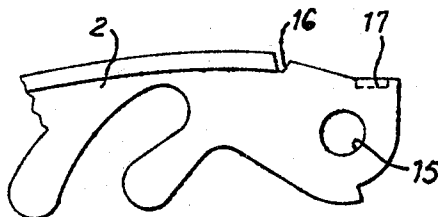


Fig. 9

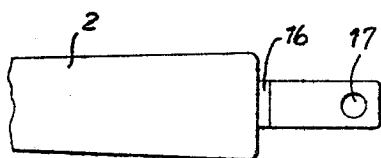


Fig. 10

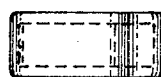


Fig. 11

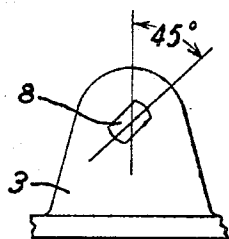


Fig. 12

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BUCKLE, PARTICULARLY FOR A SKIING BOOT

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Sch 38,690

11 Claims. (Cl. 24—70)

ABSTRACT OF THE DISCLOSURE

A boot buckle having a base in which a rectangular bolt is securely mounted. A buckle part or lever is lockably and pivotally mounted on said bolt. The buckle lever has a circular bore with a slot extending laterally from one side of said bore. A resilient means urges the rectangular bolt into the slot when the buckle is in the locked position. The buckle may be released by depressing the buckle lever thereby moving the bolt into the circular bore. When the bolt is located in the circular bore the buckle lever may be pivoted.

This invention relates to a buckle, particularly adapted for skiing boots, comprising a fastening device, a buckle part or lever being rotatable about a pivot axis and a locking device for said buckle part.

The boot buckles particularly adapted for skiing boots have a type of a buckle which is rapidly and easily operated and which holds the foot tightly in the boot. However, said buckles have a disadvantage which is that they may open especially when skiing in deep snow or during a fall thus resulting in inconvenience and possible accidents. Previous attempts have been made to secure the shoe buckle in locked position by means of clamping loops, however, such clamping loops were expensive in construction and they did not always remain securely fastened.

It is the purpose of this invention to construct a buckle, a part of which is secured against opening by a simple means at all times when in the closed position and yet can, if desired, be opened easily at any time even in unfavorable temperatures.

To attain said purpose the invention provides a buckle part that is movable from a pivoting position to a locked position perpendicular to its lengthwise direction. This results in the advantage that the buckle part is reliably secured against an undesired opening but can be opened easily when required.

According to a further detail of the invention a bolt with locking elements provides the pivot axis for the buckle part, said bolt upon being secured in the locked position prevents the buckle part from pivoting. Advantageously simple structural elements are used and the buckle can be manufactured easily.

According to a still further detail of the invention, the pivot axis is a rectangular bolt having rounded edges, said bolt being located in a slotted hole which fits said bolt when in the locked position and being located in a circular bore adjacent said slotted hole when in the pivoting position. Said bore has a diameter which corresponds to the height of the bolt. Here too, a simple and inexpensive manufacture provides a buckle which may be securely locked.

According to a still further detail of the invention, the bolt can be secured in the fastening device and the buckle part provided with the slotted hole together with the bore adjacent and above said hole. Said embodiment is very advantageous and a simple pressure of one finger is sufficient to effect opening of the securely locked buckle part.

According to a still further detail of the invention, the outer radial periphery of the buckle part is arranged at the bearing place coaxially to the center of the bearing

and abuts a support portion being mounted to the fastening device when in pivoting position. Thus, the buckle part is guided in an advantageous manner during the pivoting movement and a possible sideward tilting is prevented.

According to a still further embodiment of the invention, a spring element can be arranged between buckle part and bolt, said spring element advantageously giving additional security to the buckle part when in the locked position.

According to a still further embodiment of the invention the support portion can consist of rubber or similar material against which the buckle part can rest in both the pivoting and locked positions. Thus a spring effect is obtained giving the buckle part additional security when in the locked position and at the same time effecting advantageously a guiding of the buckle part when in the pivoting position.

The invention will be described more in detail hereinbelow with reference being had to the embodiment illustrated in the drawings, wherein

FIGURE 1 is a side-elevational view of a boot buckle according to this invention comprising a buckle part in locked position,

FIGURE 2 is a side-elevational view similar to FIGURE 1 illustrating the buckle part at the start of the pivoting position.

FIGURE 3 is a side-elevational view similar to FIGURE 1 illustrating the buckle part in a position during the pivoting process,

FIGURE 4 is a fragmentary view of the fastening device in the area of the pivot axis,

FIGURE 5 is a side-elevational view of the buckle part according to the invention having a bore with a slot therein.

FIGURE 6 is an enlarged fragmentary sectional view of another embodiment of the boot buckle of the invention.

FIGURE 7 is a fragmentary front view of the boot buckle of the embodiment of FIGURE 6.

FIGURE 8 is a side-elevational view of the housing of the boot buckle of FIGURE 6.

FIGURE 9 is a fragmentary side-elevational view of the buckle part of FIGURE 6.

FIGURE 10 is a top view of the buckle part of FIGURE 9.

FIGURE 11 is a top view of the housing of FIGURE 8.

FIGURE 12 is a fragmentary side-elevational view of the fastening device of FIGURE 6.

The shoe buckle 1 according to FIGURE 1 comprises a lever or buckle part 2, the fastening device or base 3, the clamping loop 4 and the holding means (not illustrated in detail). The fastening device 3 is secured to the upper side 6 of the skiing boot by means of rivets 5. Said fastening device has a U-shaped bearing block 7 wherein the rectangularly shaped pin or bolt 8 having rounded edges is arranged. The bearing portion 9 of the buckle part 2 is provided between the legs of the bearing block. According to FIGURE 5 said bearing portion has a keyhole-shaped opening which is comprised of a slotted hole 10 and a bore 11 provided above said slotted hole. The width of the slotted hole 10 corresponds to the short rectangular side of the bolt 8. The diameter of the bore 11 corresponds to the height of the bolt, that is, the long rectangular side of the bolt.

The clamping loop 4 which is connected to the skiing boot by holding means engages with the toothing 12 of the buckle part 2 and thus holds together both instep portions of the skiing boot.

In the locked position according to FIGURE 1, the bolt 8, which is arranged in the part 7 of the fastening device 3 and forms the pivot axis, functions as a locking member when located in the slotted hole 10 of the

buckle part 2. This locked position is achieved by the pulling action of the clamping loop 4 and by the spring effect of the support portion 13. Said support portion consists of rubber or similar elastic or resilient material mounted to the fastening device 3. It presses against the circular outer surface of the bearing portion 9 of the buckle part 2, said bearing portion being coaxial with the center 15 of the bore 11. The buckle part is thus held reliably in the locking position of FIGURE 1, and opening by lifting of the handle 14 is impossible. The buckle-type device is closed and locked satisfactorily because the support portion extends over the entire width of the web.

If, according to FIGURE 2, the upper part of the bearing portion 9 of the buckle part 2 is pressed in direction of arrow I, said buckle part 2 is pushed downwardly by compressing the support portion 13. Thus, relatively speaking, the locking member or bolt 8 slides from the slotted hole 10 into the bore 11 of the buckle part. Since the diameter of said bore substantially corresponds to the maximum cross-sectional dimension of the bolt, the buckle part 2 can be rotated on its pivot axis about said bolt by lifting of the handle 14, thus the lock can be opened. The periphery of the bearing portion 9 slides thereby on the support portion 13 and effects a reliable rotation of the buckle part about the pivot axis without the danger of swinging (see FIGURE 3). Upon closing of the fastening device, the bolt 8 can, also relatively speaking, be rotated in the bore 11 or rather the buckle part 2 rotates with its bore about the bolt 8 which is mounted in the fastening device 3. If the buckle part has reached its closing position according to FIGURE 1, the slotted hole 10 engages with the bolt 8 by the effect of the pulling action of the clamping loop and the spring effect of the support portion 13 and results again in a secure locking mechanism.

In addition to the support portion 13, a second resilient means or spring can be arranged in the bearing portion 9, said spring being supported between the bolt 8 and said bearing portion 9, also pressing the bolt into the slotted hole and giving said bolt a further additional support in said slotted hole (not illustrated in detail).

If, corresponding to another buckle type, the buckle part 2 is arranged in a further intermediate piece which is provided at the upper part of the boot and if the fastening device 3 has the adjustment toothing, the buckle part can, according to the invention, also be held securely in locked position by stopping the pivot axis. Here too a slotted hole and a bore can be provided wherein a rectangular bolt having rounded edges, relatively speaking, is movable. Depending on the position of the bolt, the lock position or the pivoting position for the buckle part is possible.

According to FIGURES 6 through 12, the boot buckle comprises the buckle part 2, the fastening device 3, the housing 14 and the bolt 8. Said bolt 8 is rigidly secured in the fastening device 3 and is axially oriented approximately at an angle of 45° (FIGURE 12). The buckle part 2 has a bore 15 (FIGURE 9) having a diameter which is equal to the height of the bolt. Furthermore, the buckle part 2 has a groove 16 which is the center of rotation of the housing 14. Buckle part 2 also has a recess 17 for a spring 18 (FIGURE 6).

The housing 14 comprises, according to FIGURE 8, a bore 20 having a slot 19 adjacent thereto, said slot being oriented at an angle of 45°. The housing 14 has defined therein an opening 21 on one side and has a hook-shaped engaging element 22 on the upper part of said opening. According to FIGURE 6, said element 22 of housing 14 is engaged in recess 16 of the buckle part 2 and at the same time partially surrounds said buckle part being retained in the position illustrated in FIGURE 6 by the effect of the spring 18. The rectangular bolt 8 is thus located in the slot 19 of the housing 14 so that housing 14 cannot rotate. Because of the fact that ele-

ment 22 is engaged in recess 16, the buckle part 2 is prevented from rotating and undesirably opening.

If a force P is applied to the housing, the spring 18 is depressed. At the same time, since bolt 8 is now located in hole 15, the housing 14 can rotate about the rectangular bolt 8 and can take along the buckle part 2 thus opening the boot buckle.

The invention is not limited to the buckles mentioned but can be applied on all types of buckles so that in an advantageous manner a secure locking is provided in spite of deep snow and outside influences and that the buckle can be opened easily if required.

Besides the use as a closing device for a skiing boot the buckle can according to the invention also be used to fasten climbing shoes because here too a secure locking and an easy and fast opening of the buckle is required.

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

1. A buckle for connecting two parts, particularly the adjacent flaps of a ski boot, comprising:

support means secured to one of said parts;

actuating lever means pivotally mounted on said support means for pivotal movement relative to said parts;

a clamping element mounted on the other part, said clamping element having means thereon coacting with said actuating lever means for securely interconnecting said two parts when said lever means is in a predetermined position; and

lock means interconnecting said lever means and said support means for positively preventing said lever means from being pivotally moved away from said predetermined position, said lock means including a locking member movable relative to one of said support means and lever means between first and second positions, said locking member when in said first position positively preventing pivotal movement of said lever means away from said predetermined position;

said lock means further including biasing means urging said locking member into said first position when said lever means is in said predetermined position, said lever means being pivotally movable away from said predetermined position only after said lock means has been manually released by placing said locking member in said second position.

2. A buckle as defined in claim 1, wherein said support means includes a substantially U-shaped bracket member secured to said one part and having a pair of upstanding legs with one end of said lever means being positioned between said legs and pivotally connected thereto, said lever means having a plurality of laterally spaced slots formed in one edge thereof, and said clamping element comprising a clamping loop pivotally connected at one end thereof to said other part with the other end of said loop being adapted to being received within one of said slots.

3. A buckle as defined in claim 2, wherein said locking member comprises a pivot pin pivotally mounting and interconnecting said lever means to said bracket member.

4. A buckle as defined in claim 2, wherein a pivot pin pivotally mounts and interconnects said lever means to said bracket member with said pivot pin having a rectangular portion, one of said lever means and bracket member having a generally keyhole-shaped opening means formed therein with said rectangular portion of said pin being positioned within said opening means, said opening means having an enlarged arcuate opening connected to a narrow slot-like opening, said slot-like opening and said arcuate opening defining said first and second positions, respectively, said slot-like opening being dimensioned so as to receive the rectangular portion of said pivot pin therein to prevent rotation of same while the arcuate open-

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ing is dimensioned so as to permit free rotation of the rectangular portion of said pivot pin therein.

5. A buckle as defined in claim 4, wherein said lever means comprises a lever member with said keyhole-shaped opening means being formed in the one end thereof, said pivot pin being nonrotatably fixed relative to said bracket member.

6. A buckle as defined in claim 4, wherein said biasing means includes resilient means coacting between said lever means and said bracket member for urging the rectangular portion of said pivot pin toward said slot-like opening.

7. A buckle as defined in claim 6, wherein the resilient means includes an elastic support member positioned between the legs of said bracket member with said support member being adapted to abuttingly contact the outer periphery of said lever means.

8. A buckle as defined in claim 2, wherein a pivot pin pivotally mounts and interconnects said lever means to said bracket member, and said lever means includes a lever member mounted on said pin for pivotal movement relative to said bracket and a movable member mounted on said lever member for movement relative thereto, said movable member comprising said locking element.

9. A buckle as defined in claim 8, wherein said pivot pin is nonrotatably fixed relative to said bracket, said lever member having a bore therein for permitting same to pivotally move relative to said pin, said movable member having a keyhole-shaped opening means therein and said pivot pin having a rectangular portion received within said keyhole-shaped opening means, said keyhole-shaped opening means having an arcuate-shaped opening in communication with a narrow slot-like opening with said arcuate opening being dimensioned so as to permit free relative rotation of the rectangular portion of said pivot pin therein while said slot-like portion is dimensioned so as to receive the rectangular portion of said pivot pin therein and prevent relative rotation of same,

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said biasing means including resilient means positioned between said lever member and said movable member for resiliently urging said movable member in a direction whereby the rectangular portion of said pivot pin is urged toward said slot-like opening.

10. A buckle as defined in claim 1, wherein the relative movement of said locking element between said first and second position is in a direction substantially parallel to the plane of pivotal movement of said lever means.

11. A buckle device as defined in claim 10, wherein a pivot pin pivotally mounts and interconnects said lever means to said support means with said pivot pin having a rectangular portion, one of said lever means and support means having a generally keyhole-shaped opening means formed therein with said rectangular portion of said pin being positioned within said opening means, said opening means having an enlarged arcuate opening connected to a narrow slot-like opening, said slot-like opening and said arcuate opening defining said first and said second positions, respectively, said narrow slot-like opening being dimensioned so as to receive the rectangular portion of said pivot pin therein to prevent relative rotation of same while the arcuate opening is dimensioned so as to permit free relative rotation of the rectangular portion of said pivot pin therein.

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