United States Patent

[11] 3,601,865

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Schaffhausen, Switzerland

[54] **SHOE CLOSURE DEVICE WITH ROTATABLE MEMBER**
3 Claims, 9 Drawing Figs.

[52] **U.S. Cl.** ..... **24/69 SK**
[51] **Int. Cl.** **A43c 11/14**
[50] **Field of Search** ..... 36/2.5, 50; 24/68 SK, 69 SK, 70 SK, 71 SK

[56] **References Cited**

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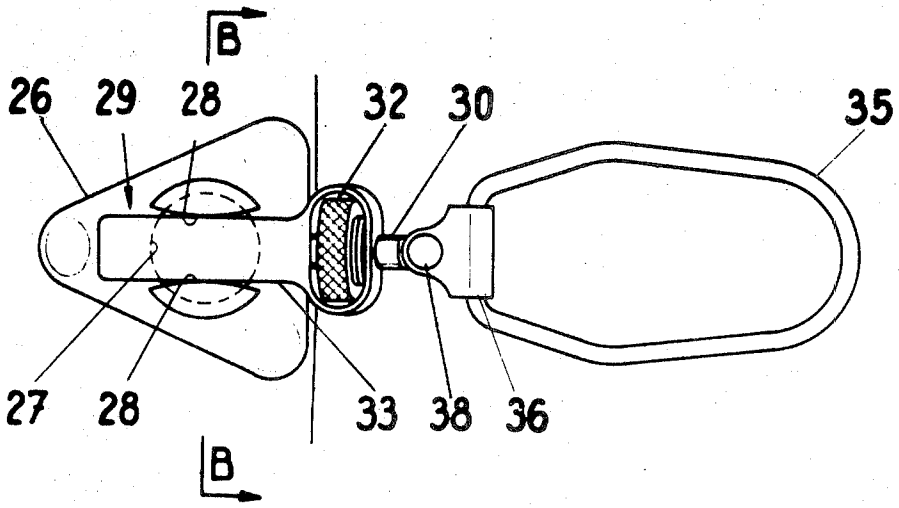
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Primary Examiner—Donald A. Griffin
Attorney—Ernest F. Marmorek

ABSTRACT: A closure device for a shoe upper has two interengageable closure means, at least one of which is mounted to rotate in a plane substantially parallel to the respective part of the upper.



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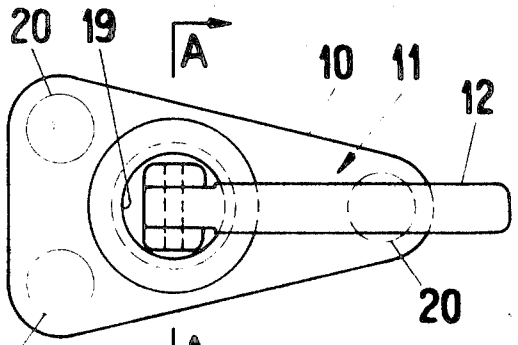


Fig. 1

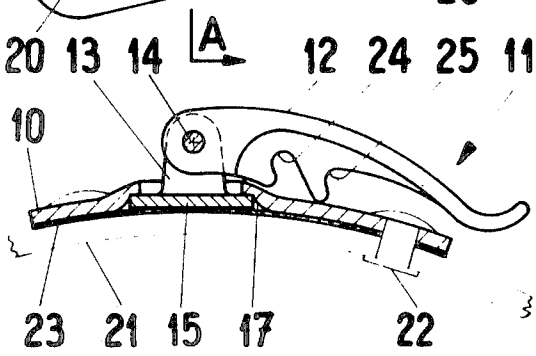


Fig. 2

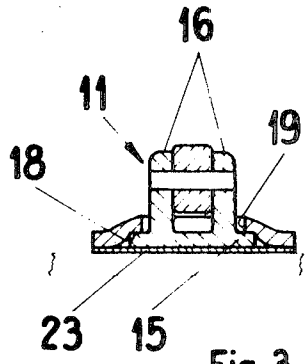


Fig. 3

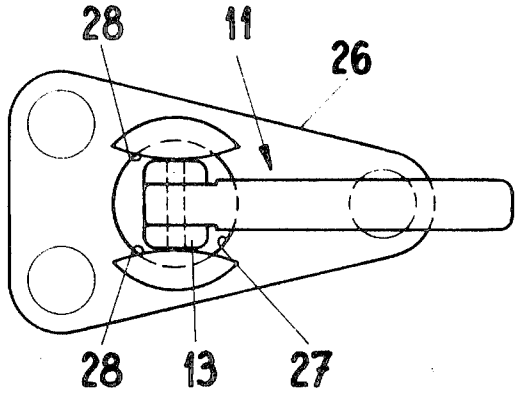


Fig. 4

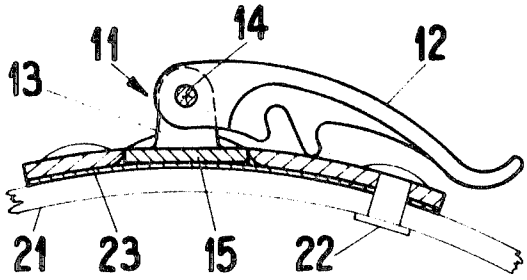


Fig. 5

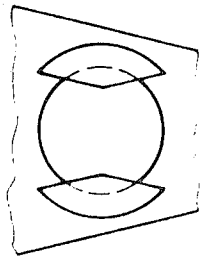


Fig. 6

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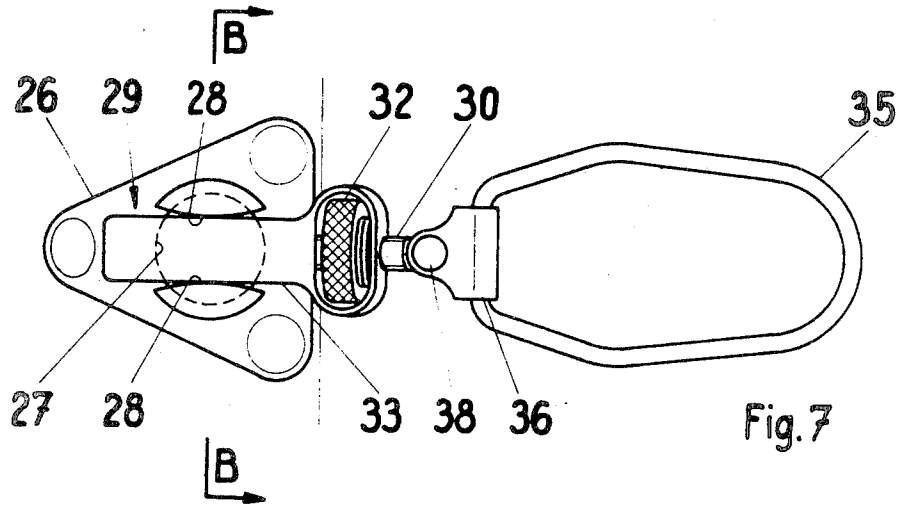


Fig. 7

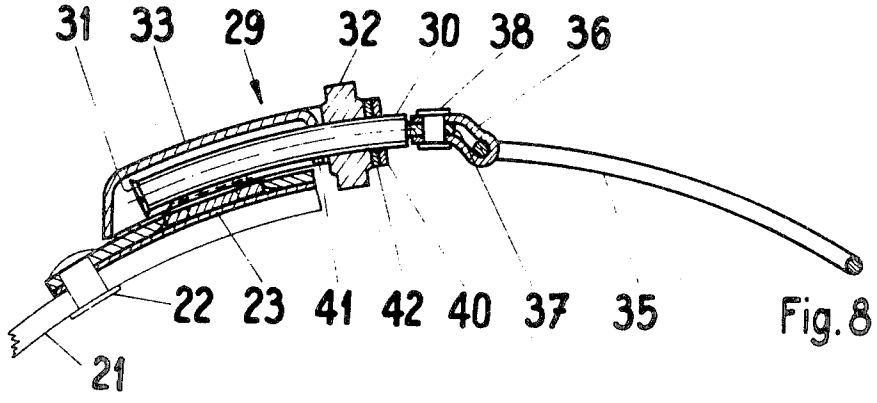


Fig. 8

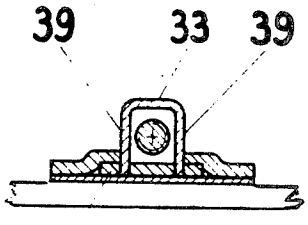


Fig. 9

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SHOE CLOSURE DEVICE WITH ROTATABLE MEMBER

CROSS-REFERENCE TO RELATED APPLICATION

Reference is had to my copending application Ser. No. 837,680, filed June 30, 1969.

BACKGROUND OF THE INVENTION

The invention relates to sports shoes, and relates more particularly to ski boots of the buckle closure type. Still more particularly, the invention relates to a closure device of the type that has two closure means at least one of which is mounted to rotate in a plane substantially parallel to the respective part of the upper, to facilitate the interengagement of the closure means.

Ski boots are known, the upper of which includes two flaps, and one flap carries one or several tension devices and the other a corresponding number of mechanisms that include a buckle each, to engage the respective tension device. Reference is had, for instance, to German patent No. 1,075,014.

The aforesaid mechanism includes the type where there is provided a spindle with a nut for adjusting the position of the buckle bracket.

In this connection, reference is had to German Gebrauchsmuster No. 1,984,497 and No. 1,985,933.

For mounting the closure means on the flaps of the shoe upper, there is often used a support member, such as a support plate.

These prior art devices, however, are deficient therein that the buckle may swing about an axis that is substantially parallel to the support plate, but otherwise is immovable; so that if there is a lack of alignment between the two closure means, namely the mechanism on one flap and the tension device on the other, it is difficult and sometimes even impossible to close the shoe properly. It may be said that it is rare, indeed, if both under all conditions, such as the condition of the foot of the wearer, the socks that he wears on that particular day, and so forth, be in perfect alignment between the closure means. While an exact alignment may not be necessary due to the width of the bracket, still it may be difficult to close the boot, and the result at nonalignment may furthermore be that the buckle gets to be distorted and in time may become unusable. Moreover, the position of the two flaps relative to each other when the shoe is first put on before the closure means are applied, and after the buckles have all been closed, are not the same; therefore while the buckle may be aligned with the tension devices in one of these positions, they may not necessarily be aligned in the other position, and therefore again there may result a difficulty as well as damage to the buckle or to any other parts of the closure device, and there may also result discomfort or perhaps even injury to the foot of the wearer.

SUMMARY OF THE INVENTION

It is accordingly among the principal objects of the invention to provide a closure device that avoids these drawbacks of the prior art.

It is another object of the invention to provide such a closure device that permits the buckle to be aligned with a tension device at all times and in all positions of the two flaps.

Further objects and advantages of the invention will be set forth in part in the following specification and in part will be obvious therefrom without being specifically referred to, the same being realized and attained as pointed out in the claims hereof.

Generally speaking, these aims are accomplished by providing a hinge, of either restricted or unrestricted rotation between the respective closure means and the support plate that is attached to the upper and on which the particular closure means is mounted. It may permit either complete rotation throughout a full circle, or, in line with a preferred embodiment, the tilting movement in opposite directions may be restricted to a predetermined angle or angles.

Among others, the instant invention has the advantage of savings of cost. BRIEF DESCRIPTION OF THE VIEWS

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description, taken in connection with the accompanying drawings, in which:

FIG. 1 is a plan view of a tension device in accordance with an embodiment of the invention;

FIG. 2 is a fragmentary sectional view thereof;

FIG. 3 is a fragmentary sectional view taken on the line A—A of FIG. 1;

FIG. 4 is a plan view similar to FIG. 1, but embodying a modification;

FIG. 5 is a fragmentary sectional view thereof;

FIG. 6 is a fragmentary plan view of a still further modification;

FIG. 7 is a plan view of an adjustable buckle carrying mechanism in accordance with an embodiment of the invention;

FIG. 8 is a fragmentary sectional view thereof; and

FIG. 9 is a fragmentary sectional view taken on the line B—B of FIG. 7.

In carrying the invention into effect in the embodiments which have been selected for illustration in the accompanying drawings and for description in this specification, and referring now particularly to FIGS. 1—3, there is provided a closing means, such as a tension device 11 that is mounted on a support member, such as a support plate 10 which, in turn, is riveted by rivets 20 onto the flap of a ski boot upper. The tension device includes a tension element 12 that includes notches 24 and 25, into the latter of which the bracket (35, FIG. 7) of the buckle will come to rest. The tension element 12 may be formed as a lever that is pivoted on a pivot pin 14. The pivot pin is supported by a projection 13 that extends upwardly from a disk 15.

The disk 15 is engaged by the underside of the support plate 10, and the projection 13 projects upwardly through a passage 19 that is defined in the support plate 10.

Through this arrangement, the tension element 12 is enabled to be rotated about the center of the disk 15, throughout a full circle.

An intermediate layer 23 may be provided between the support plate 10 and the external upper surface of the upper 21 of the shoe. This layer 23 may be made of any suitable material, preferably of steel sheet. The other parts may be made of any suitable material, for instance a lightweight metal alloy, such as aluminum magnesium silicon, or steel sheet.

The support plate 10 is preferably slightly curved, but generally is throughout its curvature substantially parallel to the flap 21 of the upper.

In accordance with the embodiment of FIGS. 4 and 5, the tilting movement of the tension element 12 about the central axis of the disk 15 is restricted by the provision of surfaces 28 that project into the passage 19, and thus serve as abutment surfaces, restricting the relative movement between the tension element 12 and the support plate 10 to an angle of about from 13° to 20°, in each direction, thus limiting the total tilting movement to from 26° through an intermediate suitable value of 30° to a maximum of 40°.

The edges 28 are shown in FIG. 4 as arcuate; they may, instead, be straight forming an obtuse angle, as shown, for example, in FIG. 6.

The mechanism of FIGS. 7–9 shows also a support plate 26 that is connected to the flap 21 of the upper by means of rivets 22. It provides for a passage 27 that, similar to that of FIG. 4 is limited by the edges 28, thereby limiting the tilting movement of the adjusting mechanism 29 to a predetermined angle, as brought out in the foregoing.

The adjustable mechanism includes a spindle 30 that has a swaged end 31, a nut 32, a housing 33, and a portion 40 that forms part of the housing 33. The housing 33, as best shown in

FIG. 9, is secured to a circular disk 34, for tilting movement in opposite directions, as explained in the foregoing, about the center axis of the disk 34.

The spindle 30 has near its head a flattened portion 37 to which there is riveted, by means of a rivet 38, a lug 36 that supports in hingelike fashion the aforesaid buckle bracket 35.

Similar to the arrangement of FIG. 4, the sideward movement of the housing 33 is restricted, yet within this restriction tilting in both directions is freely possible.

The nut 32, which engages the spindle 30, is immovable relative to the housing in respect of the longitudinal axis of the spindle 30. This immovability is brought about by the walls 40 and 41 of the housing 33; if desired, a washer 42 of synthetic plastic material may be provided between the nut 32 and the wall 40 and/or 41, for the purpose to prevent accidental turning of the nut on the spindle 30.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

Having thus described the invention, what I claim as new and desire to be secured by Letters Patent, is as follows:

1. In a closure device, for use in connection with a sports shoe having two parts to be releasably put in closing position relative to each other, and including two closure means adapted to be connected to the respective part of the upper,

the combination of,

at least one of said closure means comprising

a support member adapted to be rigidly secured to said part and extending along a portion of the upper contour thereof,

an engagement member operable to engage the other closure means,

and journaling means connected to one of said members and being journaled relative to the other member allowing for opposite rotational movement of said engagement member about an axis substantially perpendicular to the direction of extension of said support member

and means operable for restricting the rotational movement of said engagement member to not more than about 40°.

2. In a closure device, as claimed in claim 1, and means operable for restricting the rotational movement of said engagement member to not more than about 30°.

3. In a closure device, as claimed in claim 1, and means operable for restricting the rotational movement of said engagement member to not more than about 26°.