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(54) Ski boot.

(57) The present invention relates to a ski boot with an upper quarter (10) connected to the front quarter (2) for dampening the impact between a skier's tibia and the quarter (2) of the ski boot. The peculiarity of the invention consisting of the fact that it comprises an upper quarter (10) articulated to the front quarter (2) and positioned, at least partially, at a lowered zone (11) of the upper front edge of the cited front quarter (2). Connection cables (20) are also provided between said upper quarter (10) and the rear quarter (3).

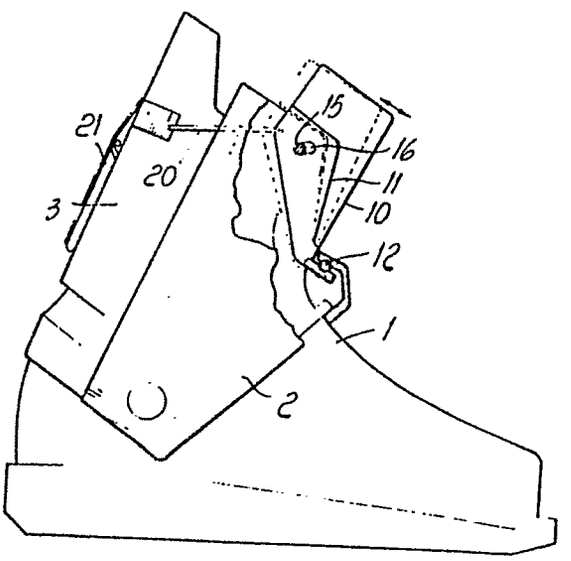

Fig. 1

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SKI BOOT

The present invention relates to a ski boot, and in particular to a ski boot with an upper quarter connected to the front quarter for dampening the impact between a skier's tibia and the quarter of the ski boot.

As is known, in ski boots, the quarters are connected to the shell in such a manner that they can oscillate about a horizontal axis extending perpendicular to the longitudinal extension of the base of the shell.

The amount of flexibility of a boot is, in general, very limited, and has a point which defines the limit of oscillation which, in some cases, causes an impact between a skier's leg and the quarter of the boot, as the quarter itself can not continue to rotate.

The results of the impact between the skier's leg and the boot quarter can become annoying for the user of the boot especially after a long period of use.

In the previous U.S. Patent N. 4.611.415 by the same applicant it is disclosed a device for the adjustment of the flexibility of a ski boot, wherein the quarters are connected to the shell with the interposition of an elastic washer which, besides permitting the adjustment of the flexibility of the quarters, within certain limits, also provides a dampening action of the impact which occurs between the leg and the quarter.

However, in this embodiment, the dampening action derives solely from a secondary phenomenon of the structure of the boot, and consequently it is not optimal.

In French Patent Application No. 81.10671 a ski boot is illustrated which, at the upper edge of the front

quarter, has a cut-out wherein a distribution plate or curved plate is located which covers the cut-out and which is articulated, at a middle portion thereof, about an axis extending transversely with respect to the longitudinal extension of the quarter and which is supported by the quarter itself.

The plate positions itself at the zone where the tibia of the leg rests, so as to always maintain the same angular orientation assumed by the leg of the skier and thus providing a distributed support zone and not concentrated on the edge line.

The plate is contained, at least for a large zone of its lateral portions, at the interior of the quarter and exerts a scraping action on the quarter itself, which, by virtue of the intrinsic elasticity, determined by the material of which the quarter is made, causes an elastic biasing action more or less determined by the degree of flexion movement, which biasing action tends to move the plate towards its initial rest position.

This embodiment has proved not to be very practical due to the fact that the elasticity is determined solely by the scraping action occurring between the plate and the quarter and by the material of which the quarter itself is made, and thus this arrangement is greatly influenced by external factors, such as temperature.

Accordingly, the aim of the invention is indeed that of solving the above mentioned problems by providing a ski boot in which it is possibile to elastically dampen the impact between the leg and the quarter without influencing the

selectable degree of flexibility of the quarter.

Within the above aim it is an object of the invention to provide a ski boot which affords the possibility of obtaining an elastic absorption of the impact between a skier's leg and the boot quarter, achieving in this way, a remarkable comfort for the skier.

Another object of the present invention is to provide a ski boot wherein the features of shock absorption or dampening do not require structural complications in the ski boot itself.

A not least object of the present invention is that of providing a ski boot, which can be easily manufactured, and which is advantageous from a purely economical point of view.

The above aim, as well as these and other objects which will become apparent hereinafter, are achieved by a ski boot, according to the invention, comprising a shell whereto are connected a front quarter and a rear quarter, characterized by the fact that it comprises an upper quarter, articulated to said front quarter and positioned at least partially at a lowered zone of the front upper edge of said front quarter, there also being provided, means for connection of said upper quarter to said rear quarter.

Further characteristics and advantages of the invention will become apparent from the following description of some preferred but not exclusive aspects thereof, illustrated by way of non-limitative example only, in the accompanying drawing figures, wherein:

Figure 1 is a side elevation view of the ski boot

according to the invention, with the upper quarter, connected to the rear quarter and illustrated in continuous lines in its position of maximum flexure, and in broken lines in its position of rest;

Figure 2 is a schematic view of the quarters of a ski boot according to another aspect of the invention, in a condition of rest;

Figure 3 is a sectional view taken along the line III-III of Figure 2;

Figure 4 is a partially cut-away view, illustrating the displacement of the upper quarter, with respect to the front quarter, at the limit of forward flexure of the leg of a skier; and

Figure 5 is a sectional view taken along the line V-V of Figure 4.

With reference to the above cited drawing figures, and in particular to figure 1, the ski boot according to the invention, comprises a shell 1 whereto are connected, in a per se known manner, a front quarter 2 and a rear quarter 3.

The peculiarity of the invention is constituted by the fact that it comprises an upper quarter 10 which is positioned substantially at a lowered zone 11 of the front upper edge of the front quarter 2.

The upper quarter 10 is oscillable with respect to the front quarter 2 and may be hinged by means of a pin 12 or similar elements, which are positioned at the front part of the quarter or by means of a lateral hinge connection provided at the lower part of the upper quarter 10.

The upper quarter 10 is also connected to the front

quarter 2 by means of pegs 15, which are preferably fixed to the front quarter 2 in a lateral position and which engage in elongate slots 16 correspondingly formed on the upper quarter 10.

With this arrangement, the pegs 15 are slideably held within the slots 16, and more precisely the slots slide with respect to the pegs since the pegs are fixed on the front quarter 2 in a lateral positon.

The upper quarter 10 is associated, through connection means constituted by cables 20, with an actuating lever 21 fixed to the front quarter and operable for exerting the desired traction force on the cables.

The cables, which practically act as a pulling element, may be connected to any point of the upper quarter, the upper quarter may be positioned either internally or externally of the front quarter; in the case wherein the upper quarter is located externally the cables will pass externally of the front quarter.

During the fase of flexure, the upper quarter undergoes a forward rotation which is delimited by the extension of the slot 16. During rotation, due to the preset connection, also the rear quarter connected by means of the cables 20 undergoes a forward translation.

In this case the shock absorbing action or dampening of the impact, is in practice obtained by exploiting the elastic action exerted by the forward flexure of the rear quarter as pulled by the cables.

The elastic return of the upper quarter, once relieved of the weight of the flexed user's leg, is obtained through the elastic return of the rear quarter to its original rest

position.

With this arrangement a homogeneous envelopment of the leg during its movements is obtained, since the rear quarter too becomes elastically loaded during a forward flexure. According to another aspect of the invention illustrated in Figures 2 to 5, wherein corresponding elements are indicated by the same reference numerals, the upper quarter 10 is associated, at its upper part, to the front quarter 2 by means of bosses or pins 25 fixed to the front quarter in a lateral position and engaging with holes or apertures 26 which are defined in the thickness of the upper quarter 10.

At the cited apertures 26, elastic shock absorbing means are provided which act between the front quarter and the upper quarter 10 and which advantageously are constituted by sectors 31 made of elastic material such as rubber or the like. The sectors 31 are housed in the apertures 26, within the thickness of the upper quarter 10, and engage with the bosses 25.

The connection determined through the elastic sectors 31, is such that, when the leg is flexed forwards to abut against the upper quarter, there is generated a rotational movement of the upper quarter 10 about the pin 12 with respect to the front quarter 2, with the consequent compression of the sector 31 on the bosses 25, consequently obtaining an elastic dampening of the impact.

As soon as the impact ceases the upper quarter elastically returns to its initial position due to the elastic expansion of the sectors 31 which bias the upper quarter 10 to its initial condition.

The sectors 31 are advantageously located to define a

semi-circumferential portion and engage with part of the bosses 25 facing the rear quarter.

From the foregoing description it will be appreciated that the invention fully achieves the proposed aim and objects, and in particular it will be noted that the invention offers the possibility of dampening the impact which is created by a forward flexure, between the tibia and the front quarter,through the exploitation of elastic means which may be constituted by the intrinsic elasticity of the rear quarter connected to the upper quarter or by the elastic sectors introduced within the holes 26 .

The invention is susceptible to numerous modifications and variations which all fall within the scope of the instant inventive concept.

Furthermore, all elements may be substituted by other technically equivalent elements.

In practice, any materials, dimensions, and contingent shapes, may be used according to requirements.

CLAIMS

1. A ski boot comprising a shell (1) whereto a front quarter (2) and a rear quarter (3) are connected, characterized in that it comprises an upper quarter (10), articulated to said front quarter (2) and at least partially positioned at a lowered zone of the front upper edge of said front quarter (2), connection means (20) also being provided for connecting said upper quarter (10) to said rear quarter (3).

2. A ski boot according to the preceding claim, characterized in that said connection means comprise at least one cable (20) connected to a lever (21) associated with said rear quarter (3).

3. A ski boot according to the preceding claims, characterized in that said upper quarter (10) has lateral slots (16) wherein a peg (15) is slideable, said peg (15) being supported by said front quarter (2) and adapted for delimiting the zone of oscillation of said upper quarter (10) with respect to said front quarter (2).

4. A ski boot comprising a shell whereto a front quarter and a rear quarter are connected, characterized in that it comprises an upper quarter (10) articulated, at its lower extremity, to said front quarter (2) and at least partially located at a lowered zone (11) of the front upper edge of said front quarter, there also being provided elastic shock absorbing means (31) interacting between said front quarter (2) and said upper quarter (10) and actuable upon forward flexing of a skier's leg.

5. A ski boot according to the preceding claims, characterized in that said elastic shock absorbing means

(31) interact between said front quarter (2) and said upper quarter (10), and are constituted by elastic sectors housed in holes or apertures (26) defined laterally on said upper quarter (10), said elastic sectors (31) engaging in contact with bosses (25), adapted for connecting said upper quarter (10) and being fixed to said front quarter (2).

6. A ski boot according to the preceding claims, characterized in that said elastic sectors (31) extend substantially along a semi-circumference.

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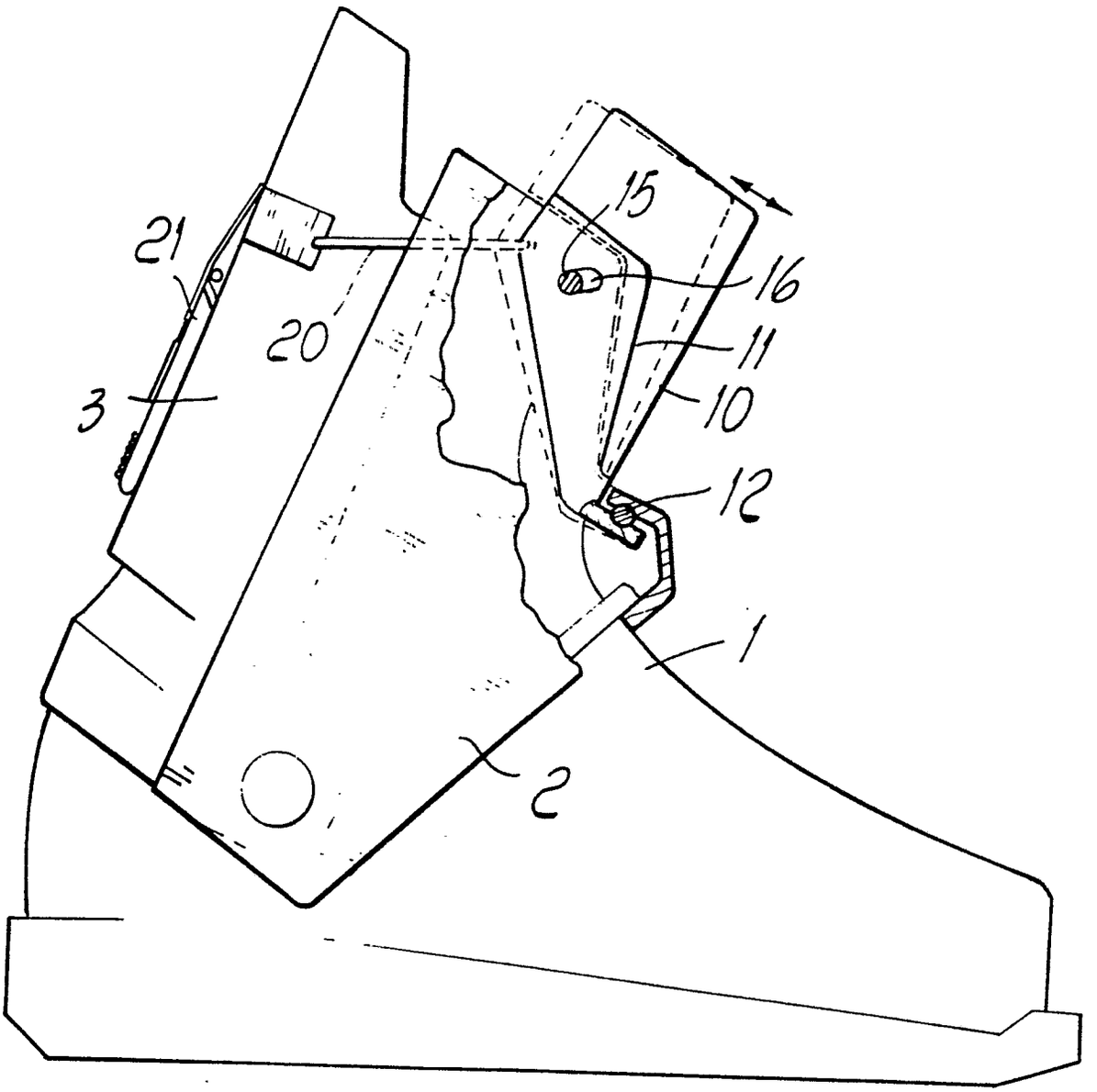

Fig. 1

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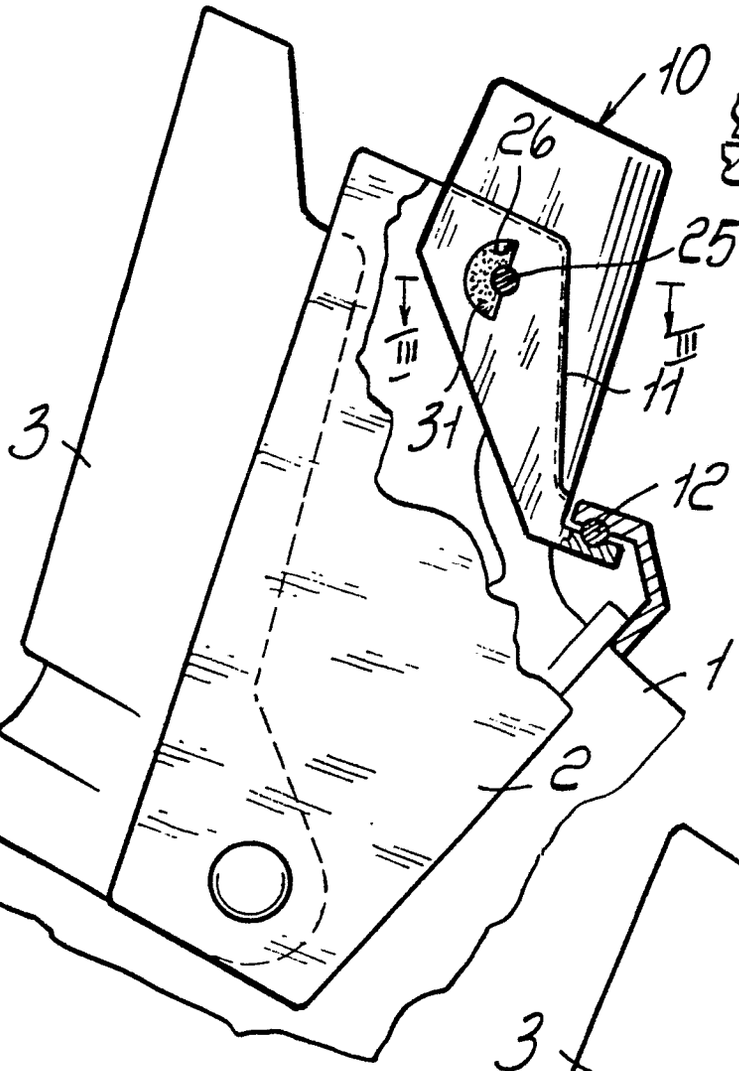

Fig. 2

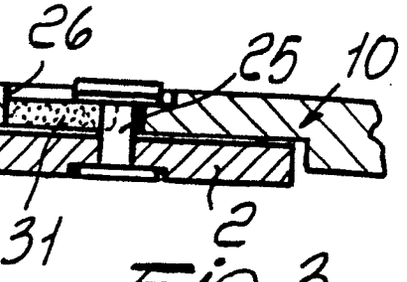

Fig. 3

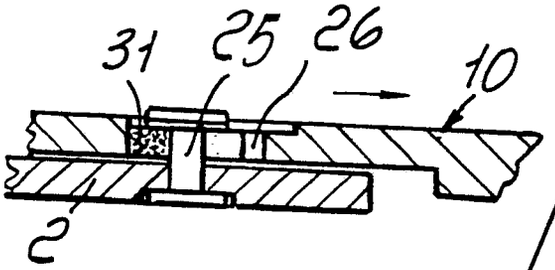

Fig. 5

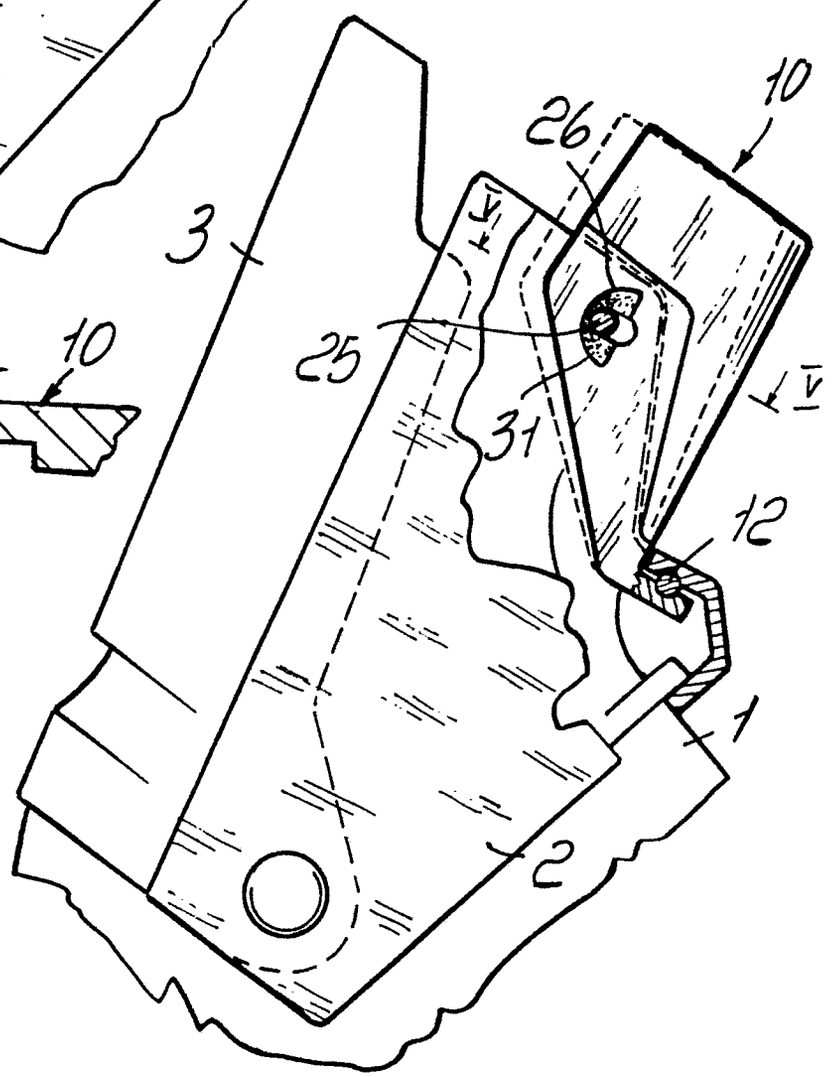

Fig. 4