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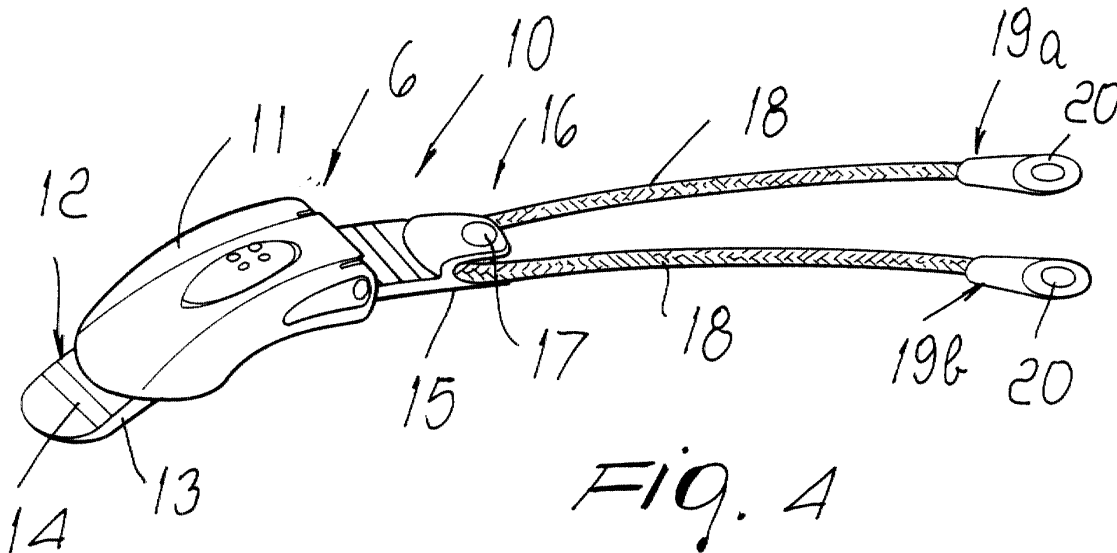
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(54) **Fastening lever, particularly for sports shoes**

(57) A fastening lever for sports shoes comprising a first flap (4) to be joined to a second flap (5), the lever (6) being associated with the first flap (4) and having a

lever arm (11) interacting with a toothed strap (13) which is associated with a cable (18) through a pulley member (16). The cable (18) has its two ends (19a, 19b) rigidly associated to the other flap (5) and spaced apart.



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Description

[0001] The present invention relates to a fastening lever, particularly for sports shoes.

[0002] Conventional ski boots have a first flap to be joined to a second flap by means of levers comprising a lever arm, which can be gripped by the user, and engages a toothed strap associated with the other flap to be joined.

[0003] Those conventional fastening levers have the drawback that the toothed strap is made of plastics and must be at the same time very rigid and non-deformable, proximate to the interaction with the lever arm, and very flexible and adaptable to the radius of curvature of the region where it rests, for example on the shell or on the quarter.

[0004] Those two features are incompatible, also because the above mentioned radius of curvature is always variable according to the size of the boot and to the degree of fastening to be achieved with the lever.

[0005] As a partial solution to the above drawback, it is known to provide toothed bands by using rather flexible plastics, but this penalizes the retention ability of the teeth.

[0006] In order to compensate for this limited retention of the teeth of the band, it is known to use selectively wide straps. However, even this entails a drawback, since it becomes necessary to use wide lever arms which accordingly have dimensions which penalize the styling of the boot, especially in medium to small sizes, in addition to increasing its production costs.

[0007] The aim of the present invention is to solve the above cited drawbacks, by providing a fastening lever which uses a toothed strap which allows to achieve optimum fastening of the flaps of a sports shoe while obtaining optimum characteristics of adaptability to the radius of curvature of the region in which the lever is applied as well as high rigidity of the teeth of the strap, so as to achieve optimum fastening.

[0008] A further object of the invention is to provide a compact fastening lever.

[0009] A further object is to provide a fastening lever which has a low weight.

[0010] A further object is to provide a fastening lever which is reliable and safe and free from malfunctions.

[0011] This aim and these and other objects which will become better apparent from the description that follows are achieved by a fastening lever, particularly for sports shoes, comprising at least a first flap to be fastened to a second flap, said lever comprising a lever arm articulated to shoulders associated with a plate rigidly coupled to one of either said first or second flaps, said lever arm selectively interacting with a first end of a toothed strap; characterized in that said toothed strap has a second end comprising a pulley member engaging a traction member having two ends associated with the other one of said first or second flaps to be fastened.

[0012] Other objects will become better apparent dur-

ing the description that follows, which must be considered together with the accompanying drawings, which illustrate by way of non-limitative example a particular embodiment and wherein:

Figure 1 is a right hand side view of a ski boot provided with the fastening lever according to the invention;

Figure 2 is a left hand side view of the ski boot of Fig. 1;

Figure 3 is a front view of the ski boot of Figs. 1 and 2;

Figure 4 is a perspective view of the fastening lever according to the invention;

Figure 5 is a cross section view of the ski boot provided with the lever according to the invention.

[0013] With reference to the above cited figures, the numeral 1 designates a sports shoe, particularly a ski boot, having a shell portion 2 and a quarter portion 3.

[0014] The shell 2 and the quarter 3 have a first flap 4 to be joined to a second flap 5 by means of one or more fastening levers, designated by the reference numeral 6. The fastening lever 6 comprises a plate 7 associated with the first flap 4, for example by means of a first rivet 8.

[0015] Two shoulders 9 protrude from the plate 7, and a lever arm 11 is articulated to the shoulders 9 by means of a pivot 10. The lever arm selectively interacts with the first end 12 of a toothed strap 13.

[0016] The band is made of substantially rigid plastics, and this allows to obtain teeth 14 which are compact and at the same time ensure optimum locking with the lever arm 11.

[0017] A traction member 18, constituted by a cable, is slidingly pivoted at the second end 15 of the toothed band 13 which is directed toward the second flap 5, at a pulley member, or cable guide, 16 which is associated with the second end 15. Guide 16 may be integral with the second end 15 or fastened thereof by means of a second rivet 17.

[0018] The traction member is constituted by a very flexible cable or string whose ends 19a and 19b are coupled at two separate points of the second flap 5 by means of terminals 20 for anchoring to the second flap by means of third rivets 21.

[0019] This allows to place the ends 19a and 19b in regions which are spaced apart and the flexible cable adapts perfectly in any case to the curved supporting surfaces on the shell and on the quarter.

[0020] Since the toothed band is made of very rigid plastics with teeth which are highly resistant to traction, it may be considerably narrower than the conventional toothed straps of the prior art therefore allowing to produce smaller levers 6, so as to improve the styling especially of shoes of smaller sizes.

[0021] The presence of the two terminals 20 also allows to use levers which double the traction points at

the second flap 5.

[0022] The use of the cable guide 16, which acts as a pulley, allows to achieve perfect balancing between the traction applied to the toothed band and to the terminals by means of the flexible cable. This balancing of all the closure points allows the sports shoe to adapt anatomically to the shape of the foot.

[0023] The aesthetic appearance of the assembly gives the sports shoe a styling which is more similar to that obtainable with a lace-type closure and a trekking boot than to the typical styling of a ski boot.

[0024] The materials and the shape or dimensions of the individual components of the shoes may vary according to specific requirements.

curved resting surfaces on said shell and on said quarter.

- 5
8. The lever according to claim 1, **characterized in that** said pulley member (16) is obtained during the molding of said strap, and is constituted by a transverse through hole formed in said second end and adapted to form a seat for said traction member.
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9. The lever according to claim 8, **characterized in that** said hole has a crescent-shaped cross-section so as to act as a pulley.

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Claims

1. A fastening lever, particularly for sports shoes, comprising at least a first flap (4) to be fastened to a second flap (5), said lever (6) comprising a lever arm (11) articulated to shoulders (9) associated with a plate (7) rigidly coupled to one of either said first or second flaps (4, 5), said lever arm (11) selectively interacting with a first end (12) of a toothed strap (13); **characterized in that** said toothed strap (13) has a second end (15) comprising a pulley member (16) engaging a traction member (18) having two ends (19a, 19b) associated with the other one of said first or second flaps to be fastened.
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- 25
- 30
2. The lever according to claim 1, **characterized in that** said plate is associated with said first flap by means of a first rivet (8).
- 35
3. The lever according to claim 1, **characterized in that** said pulley member (18) comprises a second rivet (17) associated with said second end (15) of said strap (13), said second end (15) being U-shaped.
- 40
4. The lever according to claim 1, **characterized in that** said pulley member is made integral with said second end of said strap.
- 45
5. The lever according to claim 1, **characterized in that** said traction member is constituted by a very flexible cable whose ends are rigidly coupled at two distinct points of said second flap.
- 50
6. The lever according to claim 1, **characterized in that** said two ends (19a, 19b) are rigidly coupled to anchoring terminals (20) which are associated with said second flap by means of third rivets (21).
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7. The lever according to claim 1, **characterized in that** said two ends (19a, 19b) are spaced apart, said traction member (18) adapting perfectly to the

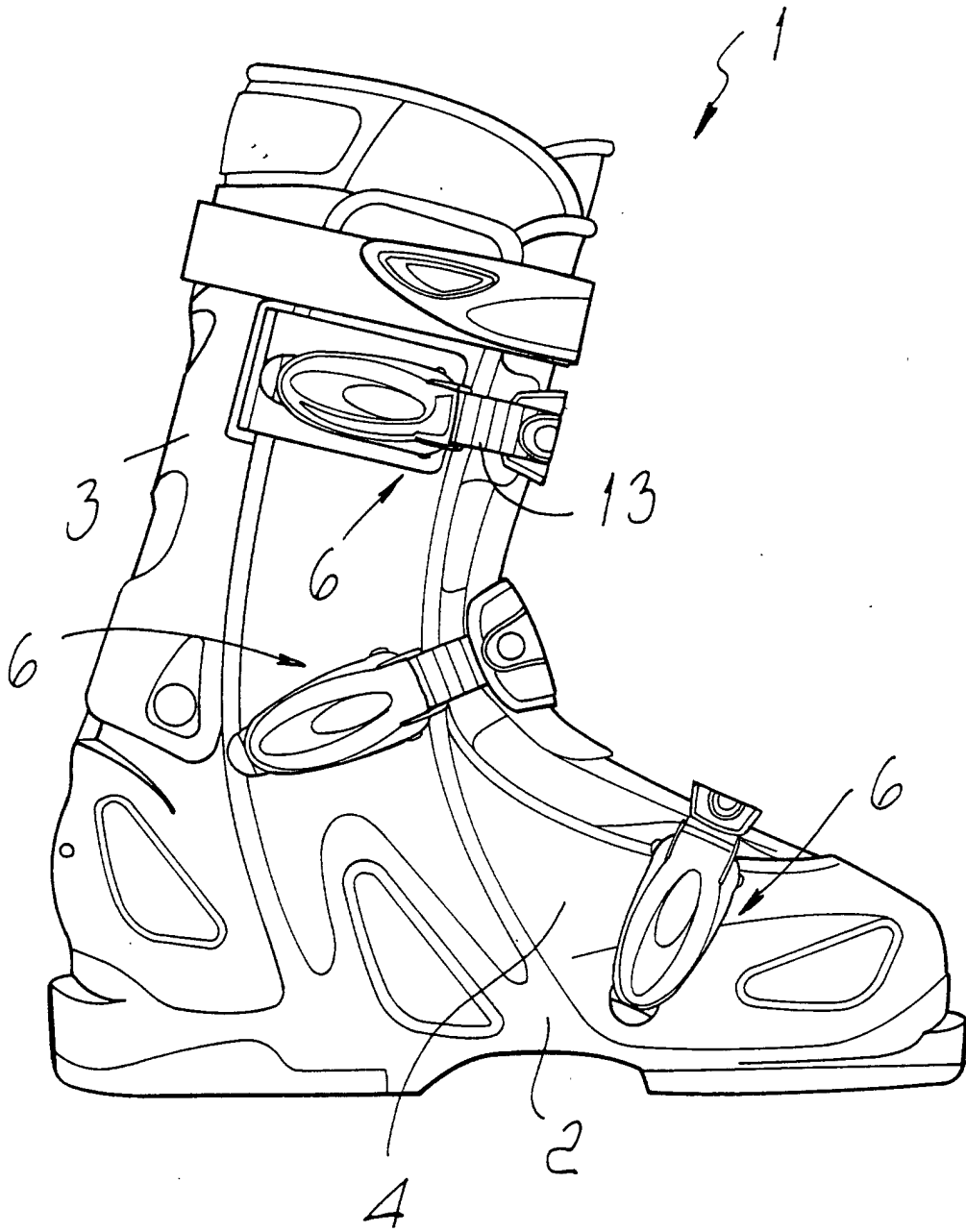


Fig. 1

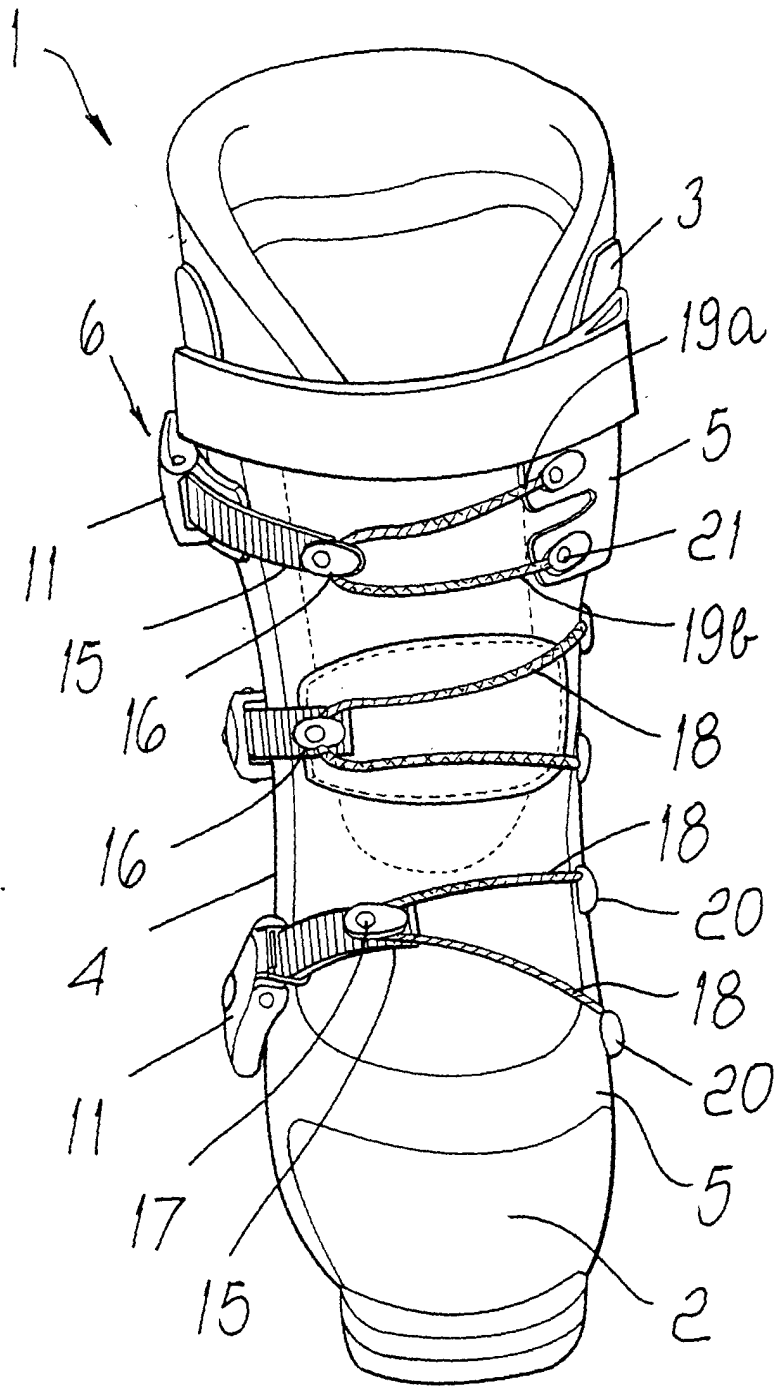


Fig. 3

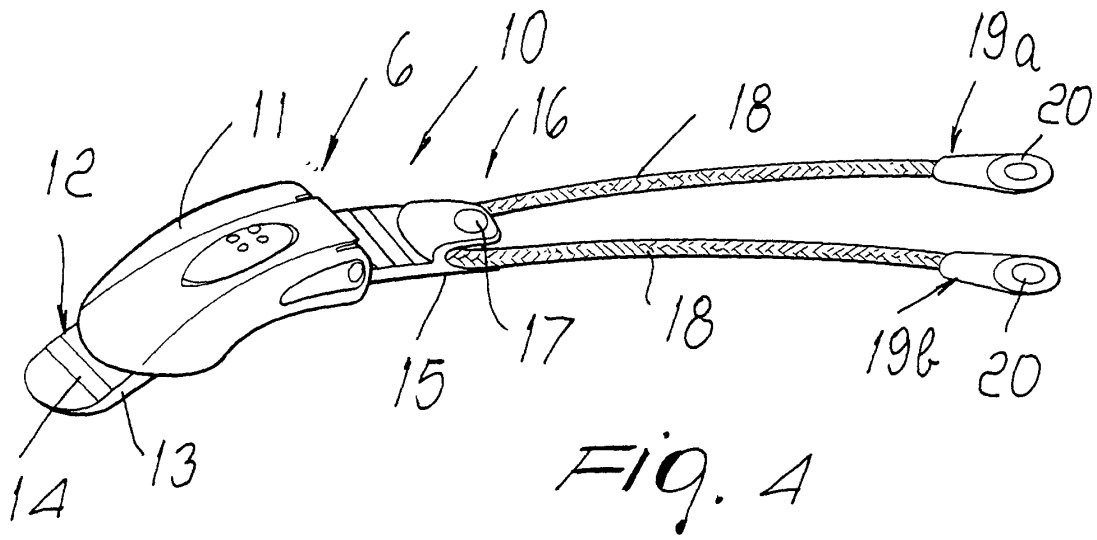


Fig. 4

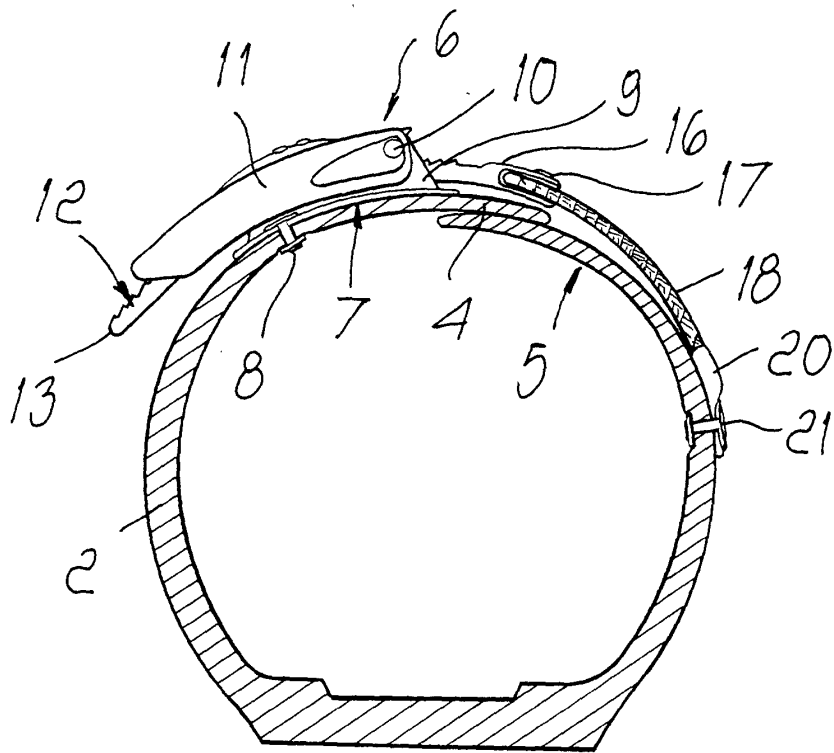


Fig. 5