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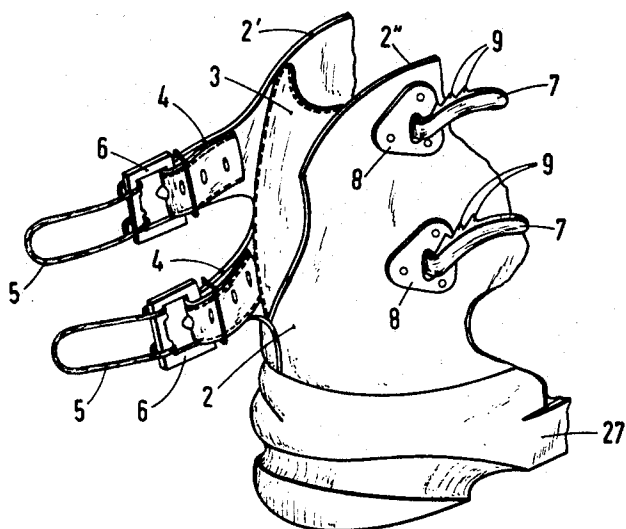
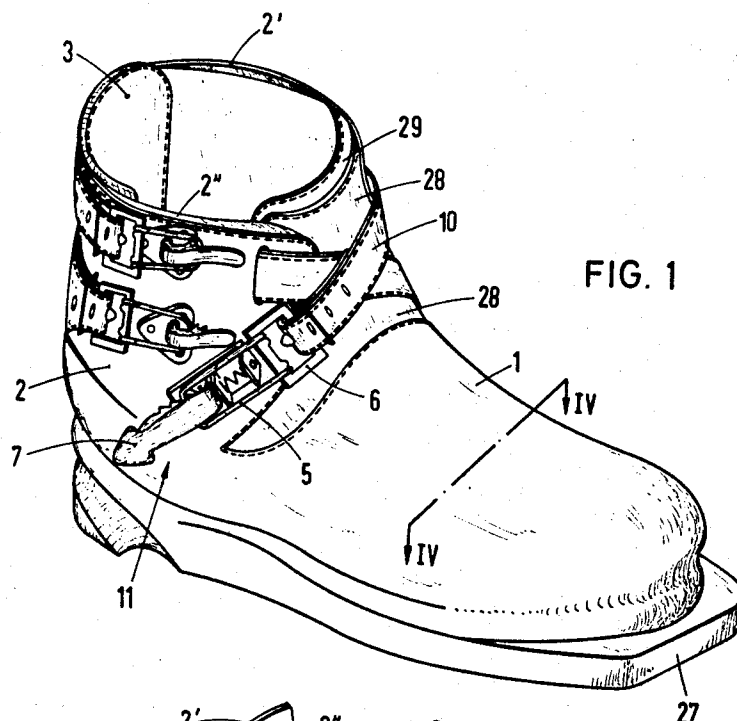
P. LÖLLMANN

3,408,752

SPORTS BOOT

Filed June 13, 1966

3 Sheets-Sheet 1



INVENTOR  
Paul Löllmann  
BY *Spencer & Kaye*  
Attorneys

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P. LÖLLMANN

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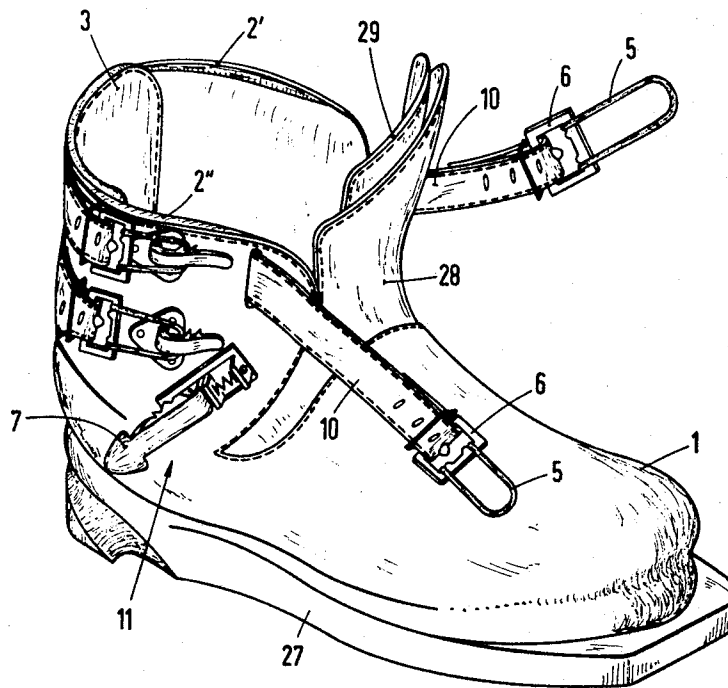


FIG. 3

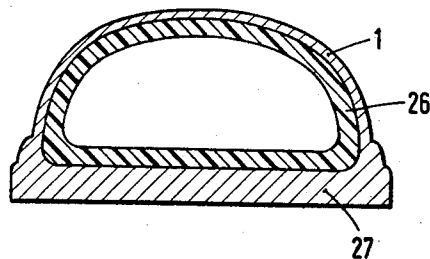


FIG. 4

INVENTOR  
Paul Löllmann  
BY *Spencer & Kaye*  
Attorneys

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P. LÖLLMANN

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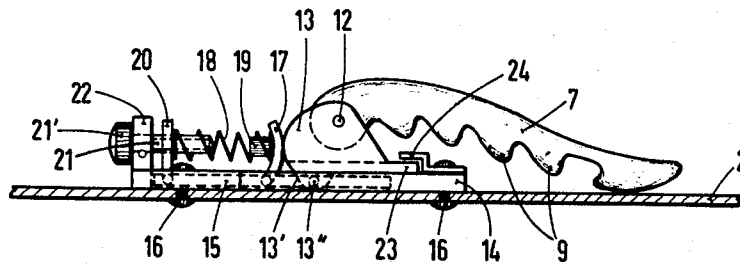


FIG. 5

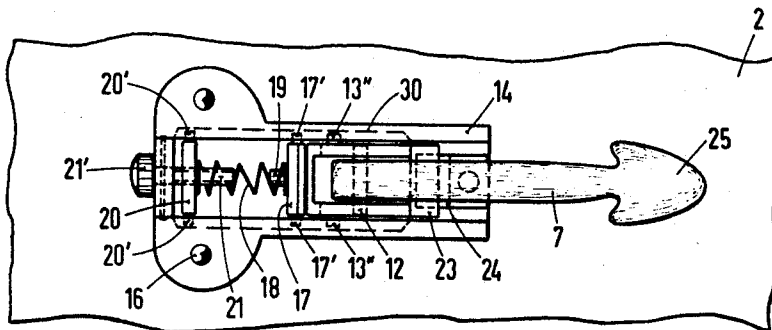


FIG. 6

INVENTOR  
Paul Löllmann  
BY *Spencer & Kaye*  
Attorneys

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## SPORTS BOOT

Paul Löllmann, Tuttlingen, Germany, assignor to  
Rieker & Co., Tuttlingen, Germany

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R 42,142

13 Claims. (Cl. 36-2.5)

### ABSTRACT OF THE DISCLOSURE

A ski boot, and a closure device for use therewith. The ski boot has an upper whose neck part is divided at its front so as to form a front opening and thus two flaps, the closure means being provided to close the opening and to tighten the flaps to each other. The closure means include tensioning straps as well as a closure device for closing the same, the closure device incorporating a pivotally mounted tensioning lever which is carried by a slidable bearing, the lever coacting with spring means in such a way that the lever is biased to its closed position and that the sliding motion of the bearing is opposed by the spring means.

The present invention relates to a sports boot and especially a ski boot which is provided with a closed vamp and an inlet opening at the rear end of the upper above the heel for the insertion of the foot.

There is one prior design of such a boot in which the parts of the upper adjacent to the rear inlet opening may be laced together along the Achilles or heel tendon. This leads to a considerable strain upon this tendon, especially when in downhill skiing the skier leans forward and the heel tendon is therefore normally subjected to considerable tension. This additional strain caused by the boot may lead to injuries of the tendon which may require a long time to heal and will often even result in invalidity of the skier.

There is another sports boot of this type in which the rear inlet opening may be closed by parts of the upper overlapping each other and in which the outer overlapping part is drawn entirely around the heel tendon and may be secured to the other parts of the upper by means of an adjustable buckle. Although this construction has the advantage of considerably relieving the strain upon the heel tendon, it is rather difficult to insert the foot into the upper since the upper of a sports boot and especially a ski boot is generally made of a very stiff leather in order to give the wearer the necessary support within the boot.

In all of the known designs of ski boots with rear inlet openings it is also difficult to insert the foot because of the far upwardly extending heel cap or counter which is required in order to give the heel the necessary support which is especially important in ski boots. However, even despite such counters, the heel support provided by all of these sports boots has not been found satisfactory.

It is an object of the present invention to provide a sports boot and especially a ski boot which has a rear inlet opening which is adapted to be closed and through which the foot may be more easily inserted than in similar boots which were previously known.

For attaining this object the present invention provides that the neck of the upper which encloses the malleolus is divided at its front side and that suitable closure means are provided for holding the two flaps together which are formed by this separation. This contrasts with the known constructions of such sports boots in which the neck of

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the upper is closed at the front just like the vamp so that it is difficult to insert the foot into the boot.

An important feature of the invention is the fact that it also provides the sports boot with a firm heel support and permits the application of a safety lock which prevents an excessive strain upon the heel tendon. For attaining a firm heel support, the invention provides that the flaps of the upper which are formed by the separation at the front of the neck part are held together by a tension strap which extends over this line of separation in the direction toward the sole and is firmly secured at one end to one of the flaps, while its other end is adapted to be hooked upon a tightening lever which is secured to the other flap. The force which is exerted upon the foot by this tension strap when the tightening lever is in its closed position extends from the divided front side of the neck of the upper in a downwardly inclined direction toward the heel. The heel will thereby be so firmly pressed into the part of the upper enclosing the same that normally it cannot be lifted off the sole when the wearer leans forwardly.

When applying this invention, it is possible to simplify the manufacture of a ski boot by molding the outer sole and the closed vamp as an integral unit which may consist of rubber or plastic and is then secured to the quarter of the upper.

The boot according to the invention which is provided with a closed vamp also has the advantage that it may be employed for feet of different sizes by providing the inside of the front part of the boot with a cushionlike lining which encloses the foot on all sides and therefore also at the side of the sole. The resilience of this cushion permits the boot to fit properly on feet of different sizes. This feature is of considerable commercial advantage since it is now no longer necessary for shoe or sporting goods stores to have as many boot sizes available as were previously required.

Another very important object of the invention is to provide a sports boot of the mentioned type which protects the heel tendon from injury. Such injuries occur in skiing especially when the heel tendon is overstrained by the skier leaning forwardly at an extreme angle or by a forward fall. There is one possibility of reducing or avoiding such an excessive strain upon the heel tendon, namely, by permitting the heel to be lifted off the sole when such an occasion arises. It is therefore a further object of the invention to provide that, when the closing device which is connected to the tension strap extending over the divided parts at the front of the neck of the upper is in its closed position, the tightening lever will be slidable against the action of a spring under the force which is exerted upon this lever by the tension strap. This resilient mounting of the tightening lever has the effect that, when an excessive tension and thus a higher strain upon the heel tendon occurs, the tightening lever will yield so far in the direction toward the front opening which is formed by the division of the neck part of the upper as will be necessary to relieve the strain upon the heel tendon. The tension of the spring may be adjustable in accordance with the prevailing conditions and requirements, for example, by means of a setscrew.

Since in some cases it may occur that at a forward fall of a skier the resilience of the tightening lever may not be sufficient for an effective protection of the heel tendon, the invention further provides that the tightening lever while being shifted will automatically pivot to its open position so that the foot will then be given sufficient freedom so as to permit the heel to be lifted off the sole.

These and further features and advantages of the present invention will become more clearly apparent from the

following detailed description thereof which is to be read with reference to the accompanying drawings, in which:

FIGURE 1 shows a perspective side view of a ski boot according to the invention in which all closing means are illustrated in their closed positions;

FIGURE 2 shows a perspective view of the rear part of the ski boot according to FIGURE 1, but with the inlet opening in its open position;

FIGURE 3 shows a perspective side view of the ski boot according to FIGURE 1, in which the closing means are in their open position which are provided for holding together the flaps which are formed by the separation of the upper at the front of the neck part thereof;

FIGURE 4 shows a cross section which is taken along the line IV—IV of FIGURE 1;

FIGURE 5 shows a side view of a safety lock according to the invention; while

FIGURE 6 shows a top view of this safety lock.

As illustrated in the drawings, the vamp 1 of the boot according to the invention is completely closed and the inlet opening for the insertion of the foot is formed by the division of the quarter 2 at its rear end above the heel and along the part covering the Achilles or heel tendon. This inlet opening may be covered by a tongue 3 which is secured to the inside of the upper.

The inner rear part 2' of the upper adjacent to the inlet opening is extended by straps 4 each of which is adjustable to different length by means of a pin buckle 6 to which an elongated eye 5 is pivotably connected. The outer rear part 2'' of the upper carries a pair of tightening levers 7 which are secured thereto by bearing plates 8. On the side of each tightening lever 7 facing the upper when the lever is in its closed position, it is provided with a series of notches 9 into any of which the eye 5 may be hooked.

The neck of the upper is divided at its front side, that is, within the extension of the closed vamp 1, which results in a pair of flaps which form the mentioned side parts 2' and 2'' of the quarter. Each of these flaps carries a tension strap 10. These straps are adapted to cross each other and to extend across the opening which is formed by the division of the front part of the upper in a downwardly inclined direction toward the heel. The free end of each tension strap 10 is again adjustable to different lengths by another pin buckle 6 to which another elongated eye 5 is pivotably connected. Each of these eyes 5 is adapted to be hooked into one or another of the notches 9 in a tightening lever 7 of a safety lock 11 which is secured to the side of one of the quarter parts 2' and 2''.

The structure and function of these safety locks 11 will be clearly apparent from FIGURES 5 and 6. The tightening lever 7 is pivotable about a pin 12 which is secured to a pair of parallel walls of a bearing element 13. Each of these walls has on its lower side an extension 13' on which a guide pin 13'' is secured. The ends of this guide pin 13'' engage into grooves 15 which are milled into the base plate 14. The bearing element 13 of lever 7 and thus also the lever itself are thus slidable along the base plate 14 which is secured by rivets 16 to the quarter 2.

The left end of bearing element 13, as shown in FIGURES 5 and 6, is acted upon by an arcuate abutment 17 under the force of a compression spring 18, the right end of which is guided on a short pin 19 which carries the abutment 17. The other end of spring 18 is supported on a plate 20 which has a threaded bore for receiving a setscrew 21 which guides the left part of spring 18 and is freely rotatable in bearing element 22 which is rigidly secured to the base plate 14.

The two supports 17 and 20 of spring 18 are likewise slidable within the groove 15 in the base plate 14 by being provided with guide pins 17' and 20' on their lower ends.

At the right end of bearing element 13, as shown in FIGURES 5 and 6, this element is provided with an extension 23 which extends parallel to and rests upon the base

plate 14. When the lock is in the closed position as illustrated in FIGURES 5 and 6, this extension 23 is overlapped by an angular bracket 24 which is rigidly secured to base plate 14. In this position, bearing element 13 of lever 7 is held in its extreme position at the right by the action of spring 18 upon the abutment 17, and bracket 24 then serves as a stop for the extension 23 to limit the further movement of bearing element 13. Bracket 24 then also prevents bearing element 13 from pivoting about the guide pins 13''. If bracket 24 were omitted such a pivoting movement would be possible when a traction is exerted by one of the eyes 5 upon the lever 7 since base plate 14 is provided on its upper side with a recess 30 which would permit such a pivoting movement.

By turning the head 21 of setscrew 21 it is possible to adjust spring 18 to such a tension that the traction which is normally exerted through eye 5 upon the tightening lever 7 will not be sufficient to draw the bearing element 13 out of the bracket 24. If, however, this traction exceeds the value which is still admissible in order to avoid an excessive strain upon the heel tendon, the bearing element 13 of tightening lever 7 will be shifted against the action of spring 18 so that the extension 23 of this bearing element will slip out of the bracket 24. As soon as this occurs, bearing element 13 will be pivoted about guide pins 13'' and the extension 23 will move upwardly. The point where the eye 5 is hooked upon the tightening lever 7 will then be elevated above the pivot axis 12 so that lever 7 will then carry out a pivoting movement about the axis 12. Lock 11 is in this manner moved automatically to its open position. In order to prevent the eye 5 from sliding off the lever 7, the free end of the lever is provided with a safety hook 25.

As illustrated in FIGURE 4, the inside of the front part of the boot is provided with a thick cushionlike lining 26 which encloses the foot on all sides. Due to the resilience of lining 26, the boot will fit properly on feet of several sizes and thus there is no need for a shoe store to keep as many difference sizes of boots on hand as were previously necessary.

An outer sole 27 may be molded upon the vamp 1 and the quarter 2 of the upper in a conventional manner. The drawings also illustrate that the boot is further provided with the usual bending inserts 28 of soft leather and a tongue 29 which covers the opening which is caused by the separation of the front side of the neck of the upper.

Although my invention has been illustrated and described with reference to the preferred embodiment thereof, I wish to have it understood that it is in no way limited to the details of such embodiment but is capable of numerous modifications within the scope of the appended claims.

Having thus fully disclosed by invention, what I claim is:

1. A sports boot comprising an outer sole and an upper on said sole having a closed vamp and an inlet opening for the insertion of a foot at the rear end of the upper above the heel, said upper having a neck part adapted to enclose the malleolus of the foot, said neck part being divided at its front side so as to form a front opening and thereby two flaps each extending from its front edge adjacent to said front opening to its rear edge adjacent to said inlet opening, and closure means for closing said openings and for tightening said flaps to each other, said closure means comprising a pair of tension straps adapted to cross each other over said front opening and one being secured at one end to one of said flaps and the other at one end to the other flap and each being adapted to extend from the flap to which it is secured at least partly over the other flap in the direction toward said sole, a pair of tightening levers mounted on said upper at both sides of said front opening, and means on the

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other end of each of said straps for hooking the same upon the associated tightening lever.

2. A sports boot as defined in claim 1, further comprising means for varying the effective length of said strap.

3. A sports boot comprising an outer sole and an upper on said sole having a closed vamp and an inlet opening for the insertion of a foot at the rear end of the upper above the heel, said upper having a neck part adapted to enclose the malleolus of the foot, said neck part being divided at its front side so as to form a front opening and thereby two flaps each extending from its front edge adjacent to said front opening to its rear edge adjacent to said inlet opening, and closure means for closing said openings and for tightening said flaps to each other, said closure means comprising a pair of tension straps each secured at one end to one of said flaps near said inlet opening, a pair of tightening levers mounted on the other flap, a pair of tension straps adapted to cross each other over said front opening and one being secured at one end to one of said flaps and the other at one end to the other flap and each being adapted to extend from the flap to which it is secured at least partly over the other flap in the direction toward said sole, a pair of tightening levers mounted on said upper at both sides of said front opening, and means on the other end of each of said straps for hooking the same upon the associated tightening lever.

4. A sports boot as defined in claim 3, in which said outer sole and said vamp together form an integrally molded unit.

5. A sports boot comprising an outer sole and an upper on said sole having a closed vamp and an inlet opening for the insertion of a foot at the rear end of the upper above the heel, said upper having a neck part adapted to enclose the malleolus of the foot, said neck part being divided at its front side so as to form a front opening and thereby two flaps each extending from its front edge adjacent to said front opening to its rear edge adjacent to said inlet opening, closure means for closing said openings and for tightening said flaps to each other, and a cushionlike lining within the front part of said boot and adapted to enclose the foot on all sides.

6. A sports boot comprising an outer sole and an upper on said sole having a closed vamp and an inlet opening for the insertion of a foot at the rear end of the upper above the heel, said upper having a neck part adapted to enclose the malleolus of the foot, said neck part being divided at its front side so as to form a front opening and thereby two flaps each extending from its front edge adjacent to said front opening to its rear edge adjacent to said inlet opening, and closure means for closing said openings and for tightening said flaps to each other, said closure means comprising at least one tension strap secured at one end to a first of said flaps at one side of said front opening and adapted to extend over said front opening and at least partly over the second flap in the direction toward said sole, at least one tightening lever on said upper at either side of said front opening and means on the other end of said strap for hooking the same upon said tightening lever, bearing means for pivotally mounting said tightening lever, means for slidably

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mounting said bearing means on said upper, and spring means acting upon said bearing means so that when said lever is in its closed tightened position and a traction is exerted thereon by said strap, said lever is slidable against the action of said spring means.

7. A sports boot as defined in claim 6, further comprising means for permitting said tightening lever to pivot automatically to its open position to release said strap when the traction exerted by said strap upon said lever exceeds a certain value and said bearing means together with said lever are shifted for a certain distance against the action of said spring.

8. A sports boot as defined in claim 7, further comprising means for adjusting the tension of said spring means.

9. A closure device for ski boots, comprising, in combination:

(a) a support fixedly secured to the ski boot;

(b) a tensioning lever bearing slidably mounted on said support;

(c) a tensioning lever pivotally mounted on said bearing and slidable therewith on said support; and

(d) spring means interposed between said tensioning lever and said support for urging said tensioning lever into its closed position, said bearing being slidable against the action of said spring means.

10. A closure device as defined in claim 9, further comprising means for mounting said bearing for pivotal movement with respect to said support about an axis which is at right angles to the plane of movement of said tensioning lever, and releasable retaining means for preventing pivoting of said bearing with respect to said support but allowing said bearing to pivot after the same has slid with respect to said support against the action of said spring means.

11. A closure device as defined in claim 10 wherein said means for pivotally mounting said bearing on said support also constitute a means for guiding the sliding movement of said bearing.

12. A closure device as defined in claim 10 wherein said retaining means comprise a bracket for pressing said bearing against said support.

13. A closure device as defined in claim 9, further comprising a spring mounting member arranged on said support and engaged by one end of said spring means, said spring mounting member being adjustable in position thereby to permit the spring tension to be regulated.

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