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TENSIONING DEVICE FOR A SKI BOOT

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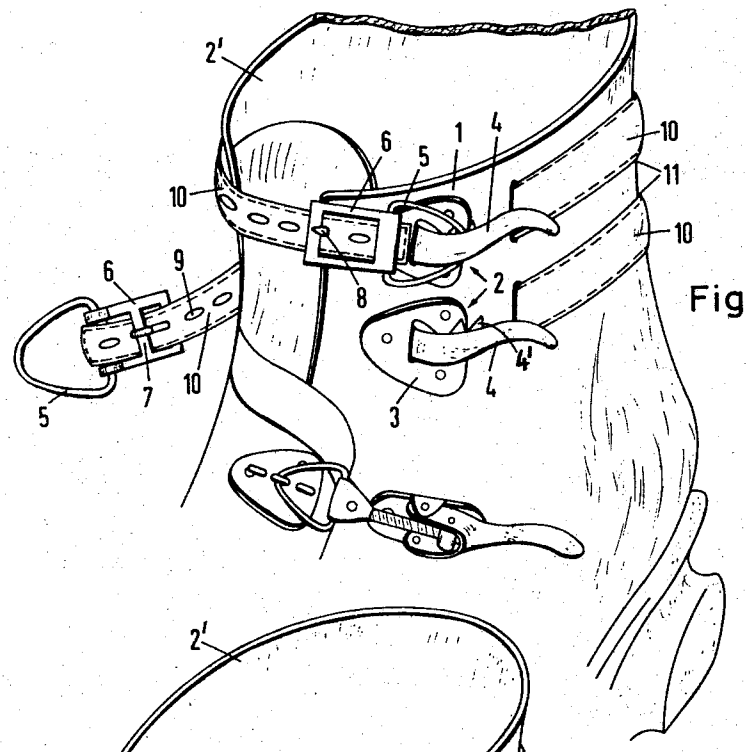


Fig.1

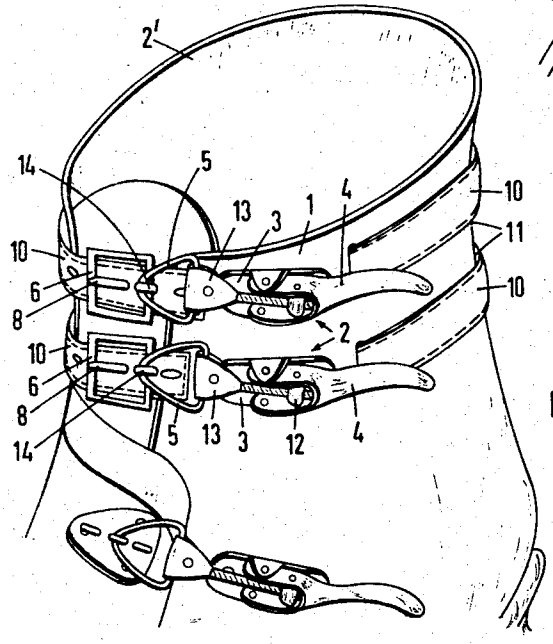


Fig.2

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TENSIONING DEVICE FOR A SKI BOOT

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The present invention relates to improvements on ski boots and more particularly to means for securing a boot to the ankle part of the leg of a skier.

An important requirement of ski boots is that the ankle joint of the skier is firmly enclosed and supported by the boot since the movements of this joint can only then be reliably transmitted to the ski. The closure flaps of a ski boot are therefore usually held together at the area of the ankle by special locking means which have the advantage over the locks which are provided on the back of the foot of being more easily and extensively adjustable. This is very important because the thickness of the ankle and of the part of the leg directly above the ankle which is enclosed by the upper end of the boot differs considerably with different people. This adjustability is also necessary in order to insure a firm fit of the boot despite the different thicknesses of socks and the legs of ski pants. On many ski boots, the locking means for the ankle part are secured to one or more straps which are either integral with or sewed upon one of the closure flaps. Since these straps expand considerably under tension, especially when moist, it is also necessary to compensate for such expansion to make these locking means adjustable.

There is one known type of ski boot which has a tightening lever secured to the side of one closure flap substantially at the height of the ankle and an eye piece connected to this lever which may be hooked upon an adjustable loop on the other closure flap. Thus, the tighter this loop is adjusted, the greater is the tension which draws the two closure flaps toward each other and holds them together when the tightening lever is pivoted to its closed position. For adjusting the width of the loop, the same is provided with holes, two of which have to be brought to coincidence with each other to receive a screw which may be secured by a nut to prevent it from falling out of the holes. If the loop is to be adjusted, the skier has to remove the screw and insert it into another pair of holes. Such a manipulation is rather difficult, especially if the lock is covered with ice. Furthermore, either with gloves or with cold fingers it is almost impossible to loosen and then to retighten the screw easily and quickly.

It is an object of the present invention to provide a lock for the ankle part of a ski boot which may be very easily adjusted so as to permit the closure flaps of the boot to be drawn tightly around the ankle. The boot on which the ankle lock according to the invention may be applied has a leg portion with inner and outer closure flaps which may be drawn together around the ankle by locking means which consist of a pivotable tightening lever which is secured laterally to one closure flap. When this lever is pivoted to its closed position, it exerts a tension upon an eye piece which is connected to the other closure flap. This eye piece may be either pivotably connected to the tightening lever on the first closure flap and be hooked upon a hook on the second closure flap or it may be pivotably connected to the second closure flap and be hooked upon the tightening lever on the first closure flap. According to the first embodiment of the invention in which the eye piece is pivotably connected to the tightening lever and may be hooked upon a hook on the second closure flap, this hook is secured to one end of a tongue buckle which is adjustably connected to a strap which is secured to the boot and passed around

the second closure flap. This buckle may according to the invention be very easily adjusted on the strap by providing the latter with a series of holes and by simply sliding the buckle along the strap and inserting its tongue into one or another of the holes. According to the other embodiment of the invention as described above, the eye piece is pivotably connected to the end of the tongue buckle which is adjustable to different positions along the strap in the same manner as described, and its eye may be hooked over the tightening lever when the latter is in the open position. Thus, when the tightening lever of either embodiment of the invention is being closed, it draws the two closure flaps together by exerting through the eye piece a tension upon the buckle which is connected by its tongue to the strap in any desired position longitudinally of the latter.

Instead of being sewed upon the upper of the boot, the strap which carries the tongue buckle may also be integral with the upper by being cut out of the latter.

The features and advantages of the present invention will become more clearly apparent from the following description thereof which is to be read with reference to the accompanying drawings, in which—

FIGURE 1 shows a perspective view of a ski boot which is provided with an ankle lock according to the invention, while

FIGURE 2 shows a perspective view of a similar ski boot which is provided with an ankle lock according to a modification of the invention.

As illustrated in both drawings, the ankle area of the ski boot is provided with two lever locks which may be of conventional designs. The lever **4** of each lock **2** is pivotably mounted on a base plate **3** which is riveted to the side of the outer closure flap **1** of the boot. According to FIGURE 1, lever **4** is provided on one side with a number of teeth **4'** and is adapted to be inserted into an eye piece **5** of stiff wire which may then be hooked on one or another of these teeth. Each eye piece **5** according to FIGURE 1 is pivotably connected to the outer end of a tongue buckle **6**, the center bar **7** of which has a tongue **8** pivotable thereon which may be inserted into one or another of a series of holes in a strap **10** which is threaded through the buckle. The two straps **10** are connected to the other closure flap **2'** and they extend around the back of the boot to the other side and are secured to the boot by the seams **11**. The easy adjustability of the buckles **6** on the straps **10** is clearly evident from FIGURE 1; when the eye piece **5** is disconnected from the the level **4**, the tongue **8** on the buckle **6** carrying this eye piece only needs to be slipped out of one hole in strap **10** and the buckle be shifted along the strap and the tongue **8** be inserted into another hole. The effective length of strap **10** including the buckle **6** and the eye piece **5** may thus be very easily varied. By hooking the eye piece **5** upon one or another of the teeth **4'** on lever **4** which is thereafter pivoted to its closed position, it is possible to provide an additional adjustment which is preferably finer than that which is attainable by the buckle **6**.

According to the modification of the invention as illustrated in FIGURE 2, each of the two lever locks **2** consists of a lever **4** which is pivotable on its base plate **3** and has a socket **12** pivotably mounted between its side walls. Transversely to its pivot axis, this socket **12** has an internal screw thread into which a screw **13** is screwed. An eye piece **5** which is pivotably connected to the head part of screw **13** may be hooked over a hook **14** which is rigidly secured to the outer end of the buckle **6**. This buckle **6** is again adjustably connected to the strap **10** by its tongue **8** which is pivotable on the center bar (not shown) of the buckle and may be inserted into one or another of a series of holes in the strap **10** which is sewed to the upper of the boot. Thus, when the lever **4** is in the

open position and the eye **5** is disconnected from the hook on the buckle **6**, the effective length of the strap including the buckle **6** may be varied within wide limits. In addition to such a coarse adjustment, a fine adjustment may be carried out by screwing the adjusting screw **13** further into or out of the socket **12** on the lever **4**.

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

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

1. In a ski boot having closure flaps adapted to enclose the ankle part of a leg, a tensioning device for tightening said flaps around said ankle part and for drawing the front edges of said flaps toward each other, said tensioning device comprising at least one strap secured to said boot and having a loose end portion on one of said closure flaps with a plurality of holes in said strap longitudinally spaced from each other, a buckle having a tongue, said end portion of said strap being adapted to be threaded through said buckle and said tongue being adapted to be inserted into any of said holes so as to vary the effective length of said strap and buckle, an eye member pivotably connected to the outer end of said buckle, and a locking lever pivotably secured to the other closure flap, said locking lever when pivoted from its open position to its closed position being adapted to hook upon said eye member to tighten said strap.

2. A tensioning device as defined in claim **1**, wherein the adjustment of said buckle on said strap serves as a coarse adjustment of said tightening means, and further comprising additional means on said lever for effecting a fine adjustment of the tensioning device, said additional means consisting of a plurality of spaced-apart teeth each adapted to hook said eye member.

3. A tensioning device as defined in claim **1**, wherein said buckle has a center bar, said tongue being pivotably secured to said center bar.

References Cited by the Examiner

UNITED STATES PATENTS

507,021	10/1893	Marshall	24—69 X
1,092,203	4/1914	Carter	24—69
2,925,672	2/1960	Trovato	24—73 X
3,132,392	5/1964	Steinberg	24—70
3,163,900	1/1965	Martin	24—70

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