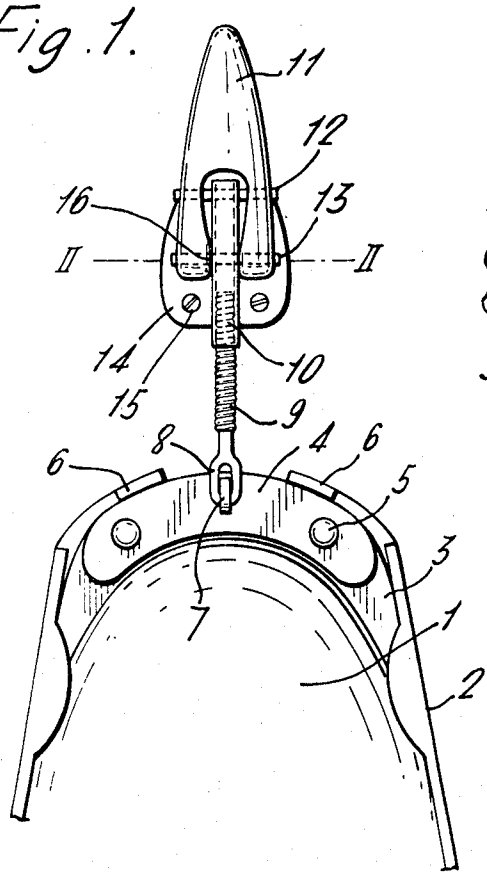
June 4, 1968 N. EIE 3,386,748

SKI FASTENING

Filed April 1, 1966

Fig. 1.



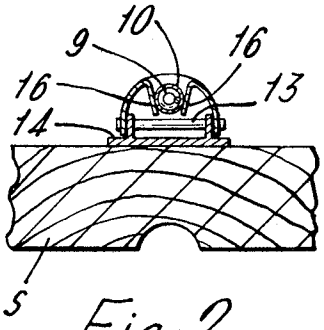


Fig. 2.

Fig. 4.

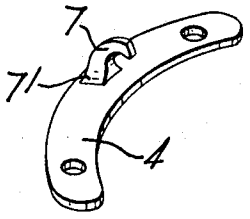
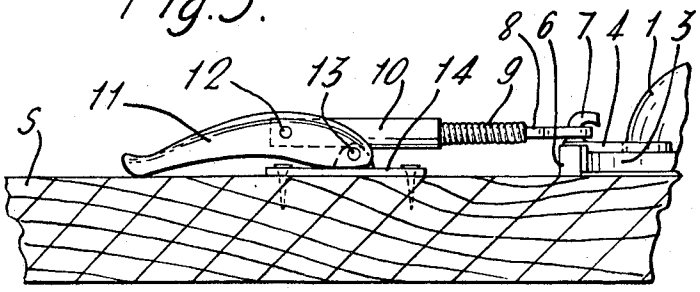


Fig. 3.



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SKI FASTENING

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6 Claims. (Cl. 280—11.35)

ABSTRACT OF THE DISCLOSURE

A ski binding in which a tightener is secured to the ski in front of the ski boot for securing the toe portion of the boot to the ski by engagement of the toe portion with a toe iron secured to the ski wherein the toe iron is provided with at least one vertical projection having substantial transverse extent against which a fitting secured to the front part of the boot sole is in contact when the tighener is tightened.

The invention relates to a ski binding or fastening of the type known as a toe fastening, i.e. a ski fastening where convenient tensioning devices are arranged on the ski in front of the foot for securing the toe part of the boot to the ski, in combination with toe irons secured to the ski, but without using a heel strap. For such ski fastenings the front part of the boot can be provided with members in engagement with corresponding parts of a locking member on the ski, such as a tightening member.

The invention has for its object to provide certain valuable improvements for such ski fastening devices, whereby the ski fastening ensures considerable technical advantages compared to previously known ski fastenings. According to the invention there is obtained a ski fastening which keeps the boot safely and free of slackness in the right place, especially without sideways movements, and which causes insignificant wear and tear of the boot.

Specifically the invention relates to a ski fastening of the type where a suitable tensioning device including a tightening member is arranged in front of the boot for securing the toe part of the boot to the ski, in combination with toe fittings or lugs secured to the ski. The new and characterizing feature of the invention is that the toe iron comprises a plurality of vertical contact surfaces extending substantially transversely of the longitudinal direction of the ski, against which a fitting secured to the front part of the boot sole can be tightened in engagement by means of tightening member.

The above-mentioned and further characterizing features and advantages of the invention will appear more clearly from the following description of a schematically shown embodiment in the drawing. The invention is however not restricted to that which is shown or described, as one skilled in this field will be able to perform modifications of the embodiment within the scope of the invention, as this is described in the following claims.

FIG. 1 is a plan view of a toe fastening according to the invention.

FIG. 2 is a section view taken along lines II—II in FIG. 1.

FIG. 3 is a side view of the ski fastening according to FIG. 1.

FIG. 4 is a detail of the ski fastening, seen separately and in perspective.

The ski fastening or binding according to the embodiment shown in the drawing comprises a fitting **4** secured to the boot **1** by pins **5** which are attached to the top side of the front part of the boot sole **3**. The front part of the boot sole has greater projection than on an ordinary ski boot. The fitting **4** is provided with a vertical hook **7**.

In the embodiment shown, a toe iron with lugs **2** is

secured to the ski, and the toe iron **2** is further provided with vertical cams **6**, against which the front edge of the fitting **4** is in contact when the ski fastening is secured to the boot. This restricts the forward movement of the boot in the lugs **2** of the toe iron when the tensioning devices of the ski fastening is fully tensioned.

According to the invention the tensioning device comprises a well known tightening member **11, 12, 13,** secured to a place **14** on the top side of the ski **5** by screws **15.**

The tightening member is connected to the front of an internal threaded casing **10** by a hinge bolt **12.** Into the rear of the casing **10** there is threaded a helical spring **9.** This threaded engagement serves for regulation of the tension of the ski fastening on the boot, as the active length of the spring **9** thereby can be adjusted.

A rigid metal part **8** in the form of a spindle, is threaded, soldered or in any other suitable way rigidly secured to the rear of the spring **9.** The metal part **8** has a flat wide rear portion with an elongated opening for receiving the hook **7** on the boot fitting **4.**

The vertical lugs **2** of the toe iron and the arranged cams **6** give the boot **1** a solid engagement with the rigidly secured parts on the ski, at the same time that the boot **1** is prevented from moving forwards in the lugs **2.** The tension in the spring **9** cannot therefore be improperly transferred ot the boot **1** when the ski fastening is secured to the boot.

The tension arm **11** of the tightening device has an opening for the casing **10,** as can be seen in FIG. **1.** This opening is preferably shaped so that bent parts **16** extend downwards and taper towards each other, so that the casing **10** on both sides will engage with parts **16** when the ski fastening is secured to the boot. Thus sideways slacken is prevented.

According to the invention the ski fastening is an effective security fastening, since the spring **9** is dimensioned and manufacture so that the limit flexibility of the spring can be exceeded when overloading the fastening, e.g. when the ski is stuck in the snow. Thus the pressure on the foot is relieved.

Also other parts of the coacting parts of the ski fastening can be dimensioned or adjusted for obtaining such security in case of overloading.

Further to prevent slackness the hook is preferably shaped as shown in FIG. 4, i.e., in which the width increases towards the root **7'.** Thus the elongated opening on the part **8** is wedged in a certain engagement with the hook **7** without sideways slackness.

It will be understood that according to the invention the ski fastening can be shaped so that the end of the spring **9** is provided with a hook or the like, and that the toe part of the boot sole is provided with an eye for this hook such as in a suitable fitting secured to the sole.

According to the invention the ski fastening can preferably be combined with tensioning devices known per se for the heel part of the boot, e.g. as shown in Norwegian Patent No. 96,871. Thus the ski fastening can be used for cross-country skiing when the heel is free, and for downhill skiing when the heel is secured to the ski.

What is claimed is:

1. A ski binding comprising a fitting adapted for being secured to the toe portion of a boot, a toe iron secured to a ski and adapted for receiving the toe portion of the boot, said toe iron including at least one projection facing the fitting and tightening means on said ski for engaging said fitting to urge the same into contact with said projection on said toe iron.

2. A binding as claimed in claim **1,** wherein said projection on the toe iron has a substantial extent in a direction transverse of the ski.

3. A binding as claimed in claim **2,** wherein said fitting

is an elongated member which is secured to and covers a substantial part of the front of the sole of the boot.

4. A binding as claimed in claim 1, wherein a pair of projections are provided on the toe iron in symmetrical position relative to said fitting.

5. A binding as claimed in claim 4, wherein said projections extend vertically upwards from said ski.

6. A binding as claimed in claim 1, wherein said tightening means comprises a spring member secured to said fitting, a casing element supporting the spring member, and an actuator arm hingeably connected to the ski and pivotably connected to the casing element for regulating the tension in the spring member and the degree of tightening of the binding, said arm being shaped to receive the casing and secure the same without lateral play.

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