

[54] **DEVICE FOR USE WITH SKI BINDINGS FOR SELECTIVELY RETAINING BINDING MEMBERS WHICH CAN BE LIFTED FROM THE SKI**

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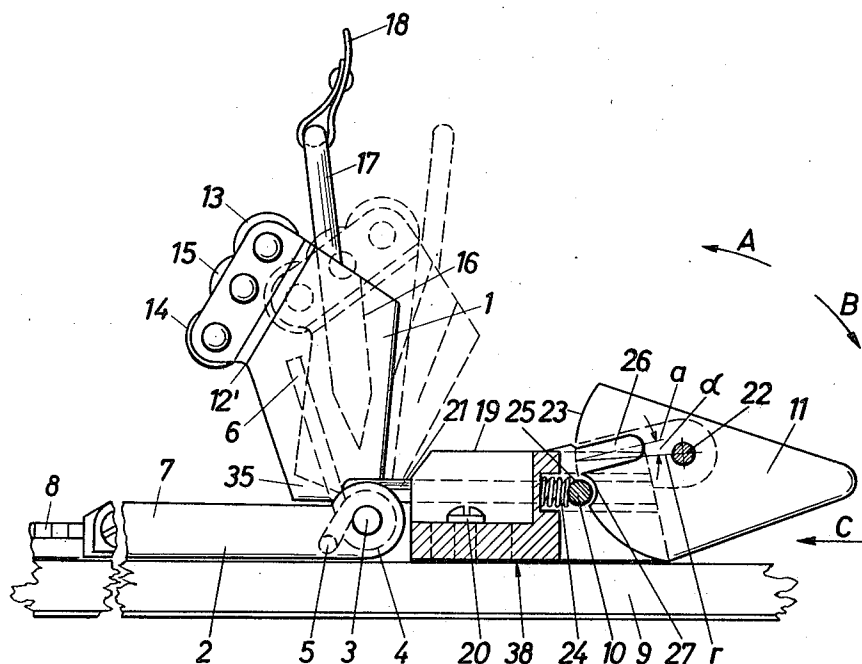
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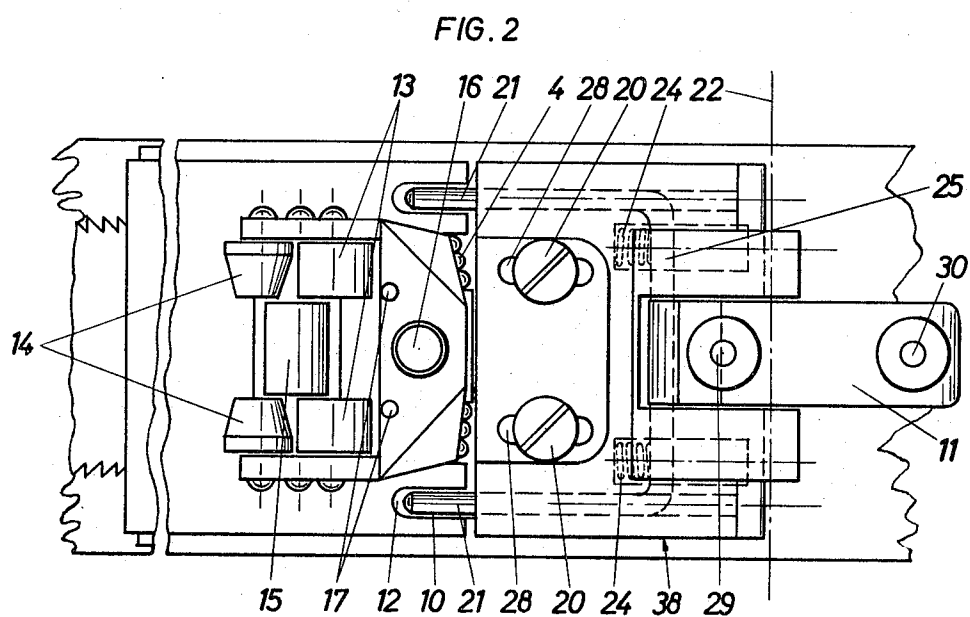
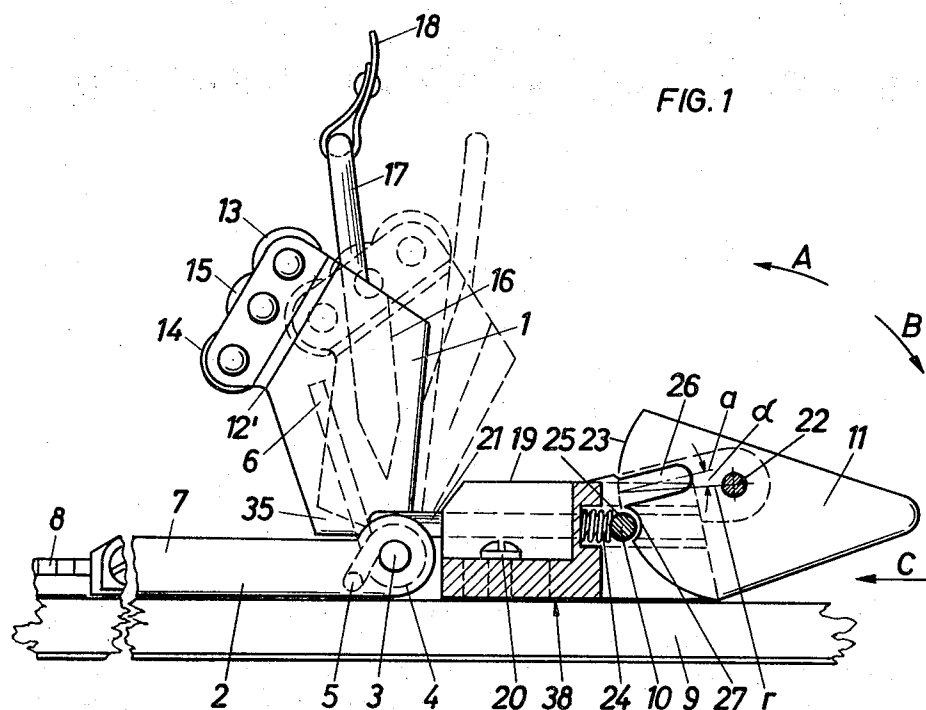
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[57] **ABSTRACT**

Device for use with ski bindings for selectively retaining binding members which can be lifted from the ski, particularly a heel plate or sole plate, wherein a spring-loaded locking member is provided in a housing that is fixed to the ski and said locking member is displaceable in the longitudinal direction of the ski and is connected to a lever for displacing the locking member.

**4 Claims, 2 Drawing Figures**





# **DEVICE FOR USE WITH SKI BINDINGS FOR SELECTIVELY RETAINING BINDING MEMBERS WHICH CAN BE LIFTED FROM THE SKI**

## **SUMMARY OF THE INVENTION**

Device for selectively retaining a heel holding-down member which can be lifted from the ski, in which a locking member is mounted in a housing that is fixed to the ski and said locking member is displaceable in the longitudinal direction of the ski, operable by a lever, and loaded by a spring which urges the locking member away from the holding-down member.

This invention relates to a device for use in ski bindings for selectively retaining binding members which can be lifted from the ski, particularly a heel plate or sole plate, to which a heel holding-down member is secured, which device comprises a spring-loaded locking member, which is mounted in a housing that is fixed to the ski and said member is displaceable in the longitudinal direction of the ski and connected to a lever for shifting the locking member.

Devices of this kind fulfill above all the frequent desire of skiers to be able to set the ski binding by a simple manipulation for downhill runs, when the heel is to be retained on the ski, and for cross-country skiing, when the heel can be lifted from the ski. Such devices can easily be provided in ski bindings having a spring-loaded cable or diagonal pull hooks. In a known design the diagonal pull hooks are secured to a backing member for the heel of the boot and said backing member is selectively retained on the ski or released from it by a locking device, which is secured to the ski and which has a locking member that is guided in a housing, which is fixed to the ski, said locking member being operable by a pivoted lever.

In cableless safety ski bindings the previously disclosed devices were designed so that the locking member is incorporated in or constitutes the safety release element. Because the locking member was biased by a release spring, which urged the locking member to its locking position, the conventional safety release jaws could not be used or at least could not perform their normally intended function.

It is an object of the invention to provide a device in which for this purpose the locking member is loaded by at least one spring which urges the locking member out of its locking position.

Another object of the invention resides in that said locking member consists of a U-shaped member and is connected to a lever for displacing the member, which lever is pivoted in the housing on an axis that is transverse to the skiing direction and has a slot which is downwardly inclined toward the heel of the boot, and a recess, which is disposed below the slot and serves to receive the web of the U-shaped member.

It is a further feature of the invention that said lever consists of a sector of a disc having a curved surface which faces the heel of the boot and has a center of curvature which lies substantially on the pivotal axis of the lever.

Further details of the invention will be explained more fully with reference to the drawing, which shows an embodiment of the device according to the invention by way of example in conjunction with a heel holding-down member mounted on a sole plate.

FIG. 1 is a side elevation showing the heel holding-down member with the sole plate and the device ac-

cording to the invention in a longitudinal sectional view and

FIG. 2 is a top plan view showing the arrangement of FIG. 1.

5 A heel holding-down member 1 is pivoted on an axis 3 to a sole plate 2, which consists of two parts 7 and 8. The member 1 is loaded by a return spring 4, which bears at one end 5 on the sole plate and at the other end 6 on the part 8 of the heel holding-down member.

10 The sole holding-down member 1 carries a pressure-exerting member 12', which is provided with rollers 13, 14, 15 to facilitate the stepping into the binding. The member 1 has in the retaining body 35 a substantially vertical bore 16 to enable an operation of the sole holding-down member 1 with a ski pole. There is also a U-shaped member 17, to which a longthong 18 can be secured. The sole plate 2 consists preferably of flexible plastics material and at its forward end is gripped in fixed position or so as to be hinged on a transverse horizontal axis whereas the heel end can be lifted from the ski 9 and by means of a clamping device 38, which is secured to the ski 9 behind the sole plate 2, can be selectively locked against being lifted.

25 A toe iron for holding the toe portion of the boot is provided adjacent to the forward end of the sole plate 2 outside of the fixing means or hinge for the sole plate. The toe iron and the heel holding-down member constitute a ski binding, into which the skier steps. When the skier applies pressure with his heel to the rollers 13, 14, 15, the heel holding-down member 1 will pivotally yield against the force of the spring 4 toward the position shown in dotted lines in FIG. 1 so that the binding is in gripping position.

30 The clamping device 38 consists of a housing 19, which is secured to the ski by two screws 20, and a U-shaped member 10, which is mounted in the housing for a longitudinal displacement therein. The two legs of the U-shaped member 21 serve as detent pins. A lever 11 is pivoted to the housing on an axis 22 which is transverse to the skiing direction. By means of the lever 11, the legs of the U-shaped member can be selectively displaced into grooves 12 formed on the surface of the sole plate 2 or can be moved back out of the region of said grooves. As a result, the sole plate can be locked against being lifted from the ski when a down-hill run is desired, or the sole plate can be released when for climbing or cross-country skiing the skier desires to lift the heel and sole plate 2 from the ski.

35 The lever 11 has the shape of a sector of a cylindrical disc and acts as an eccentric member, which has an axis of rotation 22, which contains the center of curvature of the cylindrical surface 23 of the lever 1. The U-shaped member 10 is loaded by two helical compression springs 24, which are symmetrical to the longitudinal axis of the ski and have center lines that are parallel to the longitudinal axis of the ski. Each of these compression springs bears at one end on the housing 19 and at the other end on the web 25 of the U-shaped member. The springs 24 tend to move the detent pins 21 out of the region of the grooves 12. The lever 11 has a slot 26, which extends throughout the thickness of the lever, i.e., throughout the width of the surface 23, and which opens freely in the cylindrical surface 23 and is downwardly inclined against the heel of the boot and the sole plate 2. The center line  $a$  of the slot includes an angle  $\alpha$  with the radius  $r$  of the surface 23. At the lower edge of the slot 26, the surface 23 is formed with

3

a concave groove 27, which also extends throughout the width of the surface 23 and serves to receive the web 25 of the U-shaped member 10. To enable a longitudinal adjustment of the clamping device 38 on the ski 9, openings 29 and 30 for receiving the point of the skiing pole are formed in the upper surface of the lever 11 before and behind its axis of rotation 22.

The device according to the invention has the following mode of operation: For downhill runs, the clamping device is in the position shown on the drawing because the heel of the boot is to be forced firmly against the ski. If the skier desires to lift the heel from the ski 9, e.g., for cross-country skiing, he will insert the point of the skiing pole into the forward hole 29 of the lever 11 and will turn the lever 11 in the direction of the arrow A against the force of the spring 24. As a result, the web 25 of the U-shaped member 10 leaves the groove 27 and under the action of the relaxing spring 24 enters the slot 26 so that the detent pins are pulled out of the region of the grooves 12 in the surface of the sole plate 2, which can now be lifted from the ski 9. When it is desired to lock the sole plate 2 in position, the skier forces the ski pole into the hole 30 of the lever 11 and turns the lever 11 in the direction of the arrow B so that owing to the inclination of the slot 26 the U-shaped member 10 is forced out of the slot 26 in the direction of the arrow C against the force of the spring 24 and pushes the detent pins 21 into the grooves 12 in the surface of the sole plate 2, which lies on the ski. In its end position, the web 25 snaps into the groove 27, which in this position of the lever 11 must lie below the axis of rotation 22 of the lever 12.

It will be understood that various modifications in structure can be adopted within the scope of the invention. For instance, when a longitudinal adjustment of the clamping device 38 is desired, the housing 19 can be longitudinally displaceably mounted on a track which is secured to the ski 9 and to which the housing

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can be fixed in its adjusted position.

What is claimed is:

1. In a ski binding comprising a holding-down member for the heel of the boot, which member is adapted to be lifted from the ski, the improvement comprising a housing which is secured to the ski adjacent to that end of said holding-down member which faces the rear end of the ski, a locking member in the form of a U-shaped member which is mounted in the housing for a displacement in the longitudinal axis of the ski under the influence of a spring, which urges said locking member away from the holding-down member, and means for moving the locking member against the force of said spring and for fixing said locking member in a position to hold the holding-down member against the ski, said moving means including a lever connected to displace the locking member and pivoted in said housing on an axis which is transverse to the skiing direction, said lever having a slot which is downwardly inclined toward the heel of the boot, and a recess which is disposed below said slot to receive the web of the said U-shaped member.

2. The improvement set forth in claim 1, in which two recesses for receiving the point of a ski pole are formed in the upper surface of said lever before and behind said pivotal axis, respectively.

3. The improvement set forth in claim 1, in which said lever consists of a sector of a disc having a curved surface which faces the heel of the boot and has a center of curvature lying substantially on the pivotal axis of the lever.

4. The improvement set forth in claim 1, in which said recess for receiving the web of said U-shaped member lies below said pivotal axis of said lever when said locking member is in the position to hold said holding-down member against the ski.

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