United States Patent

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[33] **Japan**
[31] **44/70154**

[54] BASE ASSEMBLY FOR SKI BOOT HEEL BINDING

5 Claims, 5 Drawing Figs.

[52] U.S. Cl. ..... 280/11.35 T
[51] Int. Cl. A63c 9/00
[50] Field of Search ..... 280/11.35 T

[56] **References Cited**

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3,391,944	7/1968	Shimizu	280/11.35 T
3,497,230	2/1970	Hashioka	280/11.35 T
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ABSTRACT: A base assembly for fixing a ski heel binding body to a ski comprises a fixing metal member provided with a sheath portion at its rear portion. It is fixed to the upper surface of the ski by screws threaded through fixing holes in the member. A guide plate includes a tongue portion to engage with the sheath portion of the fixing metal member and holes at its fore-end corresponding with the fixing holes at the fore-end of the fixing metal member when the tongue portion is engaged with the sheath portion. The guide plate is easily fixed to the fixing metal member by the tongue portion and by the screws threaded through the holes at the fore-end of the guide plate and the fixing metal member.

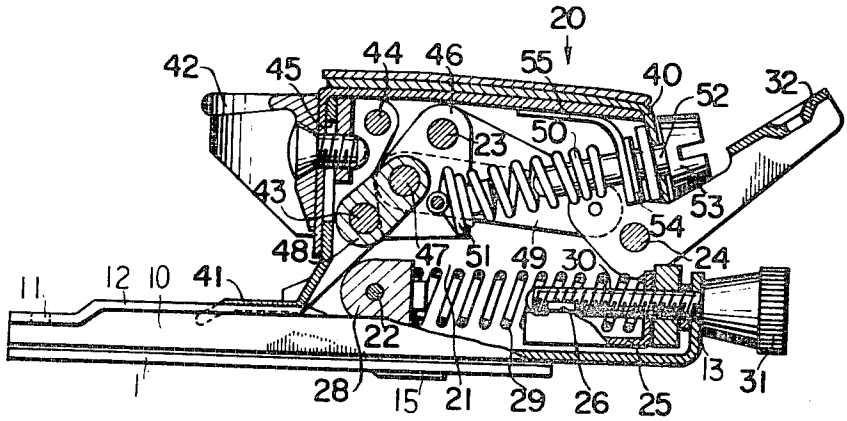

FIG. 1

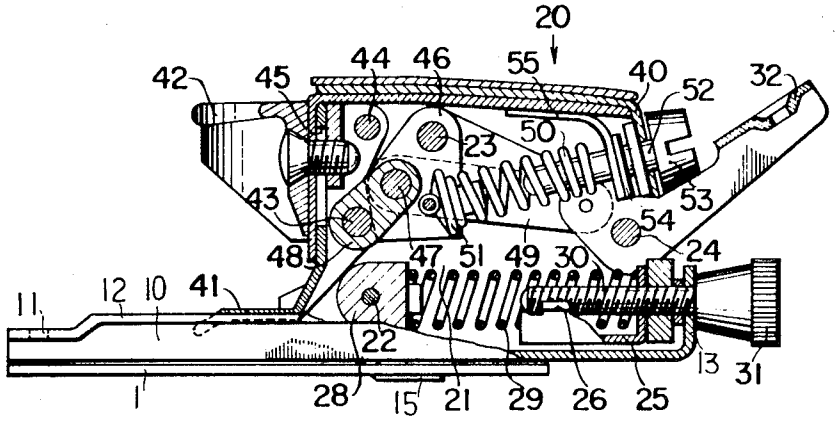

FIG. 2

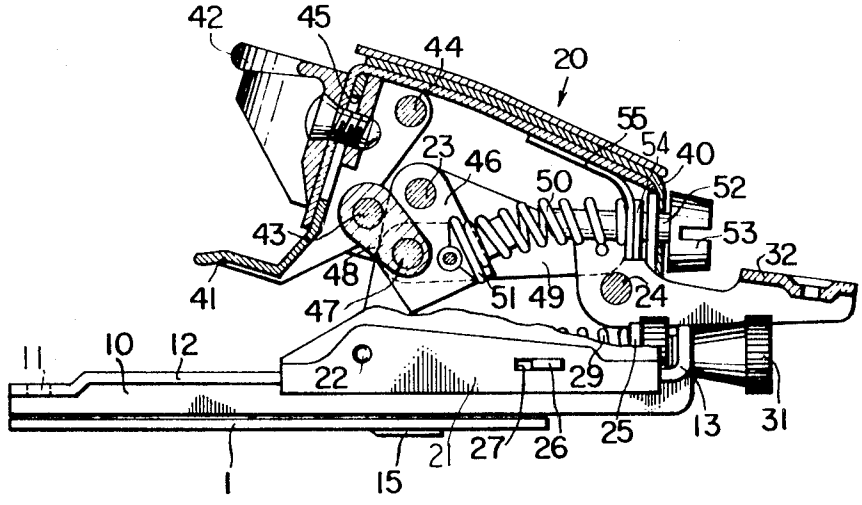

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FIG. 3

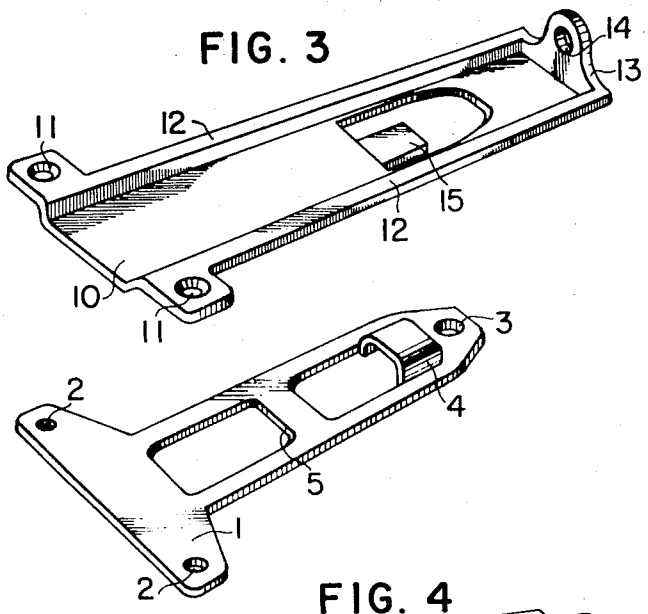


FIG. 4

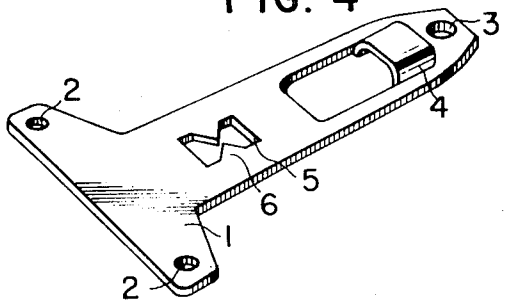
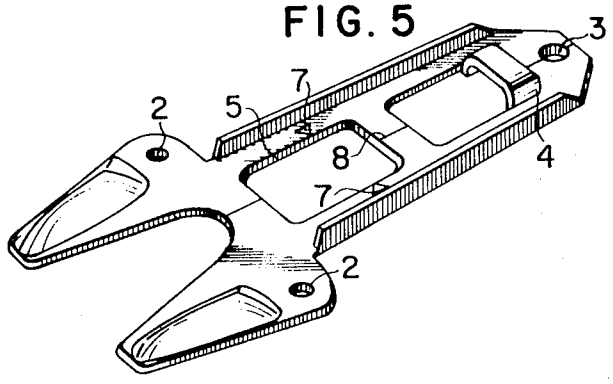


FIG. 5



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BASE ASSEMBLY FOR SKI BOOT HEEL BINDING

The present invention relates to a ski heel binding for fastening the ski boot heel to a ski and more particularly to a novel structure of a base assembly for the safety ski heel binding body.

In one type of a conventional ski heel safety binding a compression spring acts to press a ski boot heel engaging member down on the ski in normal skiing but acts to automatically release the boot heel engaging member, and the ski boot, when an abnormal severe upward thrust is applied to the heel. The ski heel binding body of this type is mounted to a base, which is directly fixed to the ski, by a device for sliding the heel binding to a desired position and setting it in that position. Normally, four fixing holes in the base extend relatively outside of the binding in both directions of the ski. Therefore, when the base mounting the ski heel binding body thereon is to be fixed to the ski by wood screws, it may cause damage to the ski and ski edges. Furthermore, the operation of fixing the base to the ski is relatively troublesome. Namely, after fitting the ski boot toe to a toe fixture (which has been fixed to the ski) a position corresponding to the rear end of the boot heel is determined and a paper pattern adapted to show the four fixing holes is fitted in the position. Then, the four fixing holes are drilled in the ski and the base fixed to the ski by the wood screws.

An object of the present invention is to provide a base assembly for a ski boot heel binding body which is easily and precisely fixed to the ski without using a paper pattern and without requiring a skilled operator.

Other objects and features of the present invention will be apparent from the following description of preferable embodiments when taken in conjunction with the accompanying drawings, in which:

FIGS. 1 and 2 are side sectional views showing ski boot heel bindings on a base assembly, according to the present invention, in the locking position and the unlocking position, respectively;

FIG. 3 is a perspective view of a fixing metal member and a guide plate comprising the base assembly of the ski heel binding of the present invention; and

FIGS. 4 and 5 are perspective views showing other embodiments of the fixing metal member, respectively.

According to the present invention, a base assembly is fundamentally composed of two members. The first member is a fixing metal member adapted to be fixed directly to the upper surface of a ski. The second member is a guide plate superposed upon the fixing metal member and engaged therewith and fixed to the ski by wood screws, which screws pass also through holes of the fixing metal member.

In FIG. 3 the fixing metal member, designated by reference numeral **1**, has two fixing holes **2** at its front (fore) end (relative to the ski), another fixing hole **3** at its rear end, and a sheath (inverted channellike) portion **4** at its rear portion. The sheath portion is projected upwards, for example, by pressure stamping.

On the other hand, the guide plate designated by reference numeral **10** has only two fixing holes **11** at its front end, the holes **11** being at the same crossways spaced interval as the two holes **2** of the fixing metal member **1**. The guide plate **10** has also guide flanges **12** formed along both its edges and a vertical wall **13** formed at its rear end. The vertical wall **13** is provided with a hole **14** through which a bolt **30** (of the sliding means for a ski heel binding body **20**, which will be described hereinafter in detail) is rotatably secured, see FIGS. **1** and **2**.

By this sliding means the ski heel binding body **20** is mounted so as to be slided back and forth upon the surface of the guide plate **10**. Preferably ski heel binding bodies are disclosed in U.S. Pat. No. 3,497,230, granted to the same assignee as this application. For the purpose of simplifying this disclosure, one of the ski heel binding bodies according to the above patent is employed in the below-described embodiment of the present invention.

The side frames **21** each have a groove formed at its lower end to engage with the guide flange **12** of the guide plate **10**.

The side frames **21** are connected so as to leave a space between them in which are mounted a spring receiving pin **22**, an upper pin **23**, and a rear pin **24**. A spring-receiving seat **25** is engaged with the side frames by projections **26** extending from both sides of the spring-receiving seat and inserted through horizontal holes **27** of the side frames **21**. A spring **29** is provided between the spring-receiving seat **25** and the spring-receiving pin **22**.

The bolt **30** for sliding the ski heel binding body **20** is threaded through the spring-receiving seat **25**. Reference numeral **31** is a head of the bolt **20**.

On the rear pin **24** connecting the side frames **21**, a casing **40** is rotatably secured at the lower rear portion thereof so as to cover the side frames **21**. An L-shaped lever **32** is rotatably secured at the turned portion of casing **40** so that the lever extends at its rear portion outside of the casing. A ski boot heel receiving member **41** is secured to the front face of the casing **40** by two pins **43** and **44**. A heel engaging member **42** is secured to an elongated slot **45** in the front face of the heel receiving member **41** so that the member **42** is adjustable from top to bottom by a screw.

A swinging link **46** is rotatably secured on the upper pin **23** connecting the side frames **21**. A fore link **48** connected to the lower end of the swinging link **46** by a pin **47** is rotatably secured to the above-mentioned pin **43**. A connecting link **48** connects the pin **47** and the L-shaped lever **32**.

A spring **50** is provided between a spring-receiving means **51** and a spring adjusting screw **52**. The spring-receiving means **51** is formed to be integral with the swinging link **46**. The spring adjusting screw **52** is rotatably secured to the upper back portion of the casing **40** with the head **53** projecting beyond the casing. Spring pressure adjusting means **54** is secured to the front portion of the spring adjusting screw **52** and an extension arm **55** of the latter is in contact with the inner face of the casing **40**.

In operation, when the lever **32** is pushed down, for example, by the tip of a ski pole against the force of the spring **50**, the heel engaging member **41** is displaced to the unlocking position, as shown in FIG. **2**. When the heel-receiving member **41** in the unlocking position is pressed down by the boot heel, the heel-engaging member is displaced to engage the boot heel, as shown in the locking position in FIG. **1**. As lines connecting the three pins **23**, **47** and **43** come close to a straight line, the heel engaging member **42** is not moved by small forces. However, when a severe upward force is applied to the foot, the fore link **48** begins to rotate in the clockwise direction against the spring **50**. As soon as the fore link **48** goes over the dead point of the spring **50**, the pin **47** is pressed downwards by the spring **50** (as shown in FIG. **2**), thereby pushing up the pin **43** as well as the heel engaging member **42**. On the other hand, since the severe upward force to the foot also displaces the side frames **21** to the rearward direction, the ski boot is disengaged from the ski heel binding, preventing an accident, such as a sprain.

To fix the ski heel binding to the ski in accordance with the present invention, the same steps as with conventional bindings are taken in that a toe fixture is fixed to the ski and that, after setting the boot toe to the toe fixture, the correct position corresponding to the rear end of the boot is determined on the ski. According to the present invention, the fixing metal member **1** is moved back and forth directly below the boot heel to set a certain fixed point of the fixing metal member at the rear end of the ski boot. By threading a wood screw through the fixing hole **3**, the fixing metal member is fixed to this position on the ski. Then the guide plate **10** is superposed upon the fixing metal member **1** to engage the tongue **15** of the guide plate with the sheath portion **4** of the fixing metal member and to bring the holes **2** and **11** of both members into correspondence. Two wood screws are positioned through the fixing holes **2** and **11**, respectively, and threaded into holes in the ski, thereby fixing the both members to the ski.

The base assembly of the present invention, composed of the fixing metal member **1** and the guide plate **10**, does not require a conventional paper pattern to determine the fixing position of the ski heel binding, since the fixing metal member **1** itself serves the same function as paper pattern. In the base assembly fixed to the ski by the three wood screws as a whole, the fixing hole **3** is positioned in the center of both side edges and the interval of the fixing holes **2** and **11** has nothing to do with the slide of the ski heel binding **20**, whereby the interval between the fixing holes **2** and **11** can be made rather narrower with the result that there is no fear that the wood screws would damage the ski or ski edges.

The ski heel binding body **20**, which is assembled beforehand on the guide plate **10**, can be integrally fixed to the ski by the fixing metal member **1**. Though the guide plate **10** is fixed to the ski only by the two wood screws, it is immobilized by the tongue **15** which is engaged with the sheath portion **4** of the fixing metal member **1**. If the ski heel binding body **20** is desired to be separated from the ski because of an obstruction thereof, the ski heel binding body may be separated (together with the guide plate **10**) by removing only the two wood screws. Though the tongue portion **15** of the guide plate **10** is exposed beyond the bottom of the fixing metal in the embodiment shown in FIGS. **1** and **2**, the fixed state of the guide plate **10** is to be substantially horizontal as the center portions of the ski are slightly curved upwards. The tongue portion **15** may be concealed in the sheath portion, if desired.

Preferably, a window hole **5** is made in the fixing metal member **1** to reduce its weight thereof and to make apparent the position that the rear end of the boot heel will take. The window hole may be any shape such as circle, diamond-shape, rectangle or the like, provided that the center fixed point can easily be obtained. FIG. **4** shows another embodiment of the fixing metal member in which two triangular projections **6** are opposed from the inside of the window hole **5**. FIG. **5** shows another embodiment of the fixing metal member in which triangle marks **7** are stamped on the opposite sides of the window hole **5**. Further, in the embodiment of FIG. **5**, centerline marks **8** are stamped along the lengthwise direction of the fixing metal **1** so that anyone can easily align the centerline marks of the fixing metal member with the centerline on the ski.

What is claimed is:

1. In a ski heel binding comprising base means, side frames to be moved along the base means, a casing pivotally fitted over said side frames and provided with a boot heel engaging member at the front face thereof, and means normally pressing down the boot heel engaging member but disengaging it only when an abnormal severe upward thrust is applied thereto, the improvement in the base means comprising: a substantially flat fixing member provided with two fixing holes at the fore-end portion thereof, a sheath portion projected upwards at the rear portion thereof, and another fixing hole at the rear end thereof; and a guide member provided with two fixing holes at the fore-end thereof at the same transverse interval as the holes at the fore-end portion of the fixing member, flanges at both longitudinal side ends thereof engaged with the lower end of said side frames, a tongue portion adapted to be engaged with said sheath portion, and a vertical wall at the rear end thereof having a hole through which protrudes a screw for sliding said side frames along the flange.

2. In a ski heel binding as claimed in claim **1**, said fixing member further provided with a window hole in front of said sheath portion.

3. In a ski heel binding as claimed in claim **2**, said window hole being provided with triangular projections projected from opposite sides thereof.

4. In a ski heel binding as claimed in claim **2**, said fixing member being provided with triangles marked on the opposite outer sides of the window hole and a centerline marked thereon to indicate its placement along the centerline of the ski.

5. In a ski heel binding comprising base means, side frames to be moved along the base means, a casing pivotally fitted over said side frames and provided with a boot heel engaging member at the front face thereof, and means normally pressing down the boot heel engaging member but disengaging it only when an abnormal severe upward thrust is applied thereto, the improvement in the base means comprising: a substantially flat fixing member provided with a plurality of fixing holes including at least two holes at its fore portion, and a sheath portion projected upwards; and a guide member, upon which the ski heel binding side frames are mounted, provided with a tongue portion to engage with said sheath portion and fixing holes brought into correspondence to said holes at the fore portion of the fixing member as the tongue portion is engaged with the sheath portion.

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