United States Patent [19]

With

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[54] **SKI BINDING WITH CLAMPING BAIL**

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Oct. 15, 1970 Norway 3895/70

[52] **U.S. Cl.** ..... **280/11.35 B**
[51] **Int. Cl.** **A63c 9/20**
[58] **Field of Search** ..... 280/11.35 B

[56] **References Cited**

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3,481,618	12/1969	With	280/11.35 B

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[57] **ABSTRACT**

In a ski binding of the toe binding type having a clamping bail engaging the sole rim and pivoted in a toe iron, and a toothed hook engaging a transverse portion of the bail and pivoted at an axis in a structurally defined distance from the pivotal axis of the bail, the hook has on its front side a corrugated edge onto which the said transverse portion can be pressed firmly in an inwardly turned inoperative position of the hook. The pivotal support for the hook is integral with the toe iron or engages a forward portion of the same. In the latter case it is attached to the ski by only one screw located behind the pivotal axis of the hook and is locked against lateral rotation by engaging the bottom plate of the toe iron. The said transverse portion of the bail is the bight portion of the same or a cross-bar interconnecting the legs of the bail at bends forming downwardly and inwardly facing angles, while the bail has an outward spring bias.

10 Claims, 6 Drawing Figures

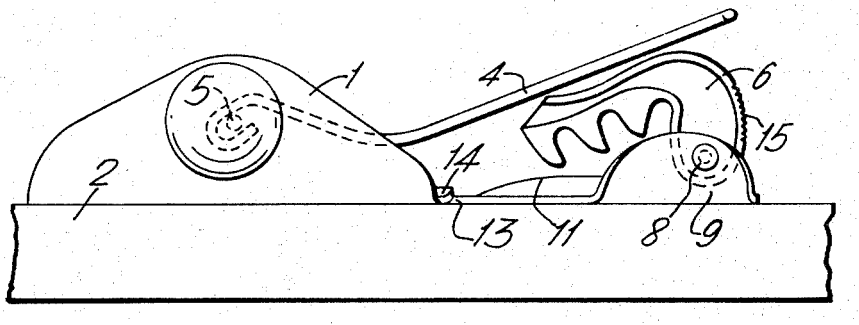


Fig. 1.

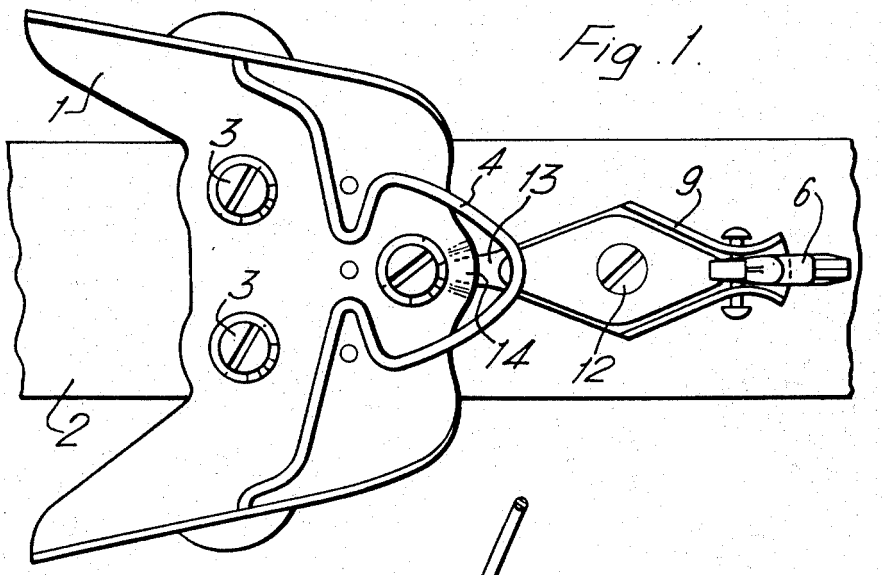


Fig. 2.

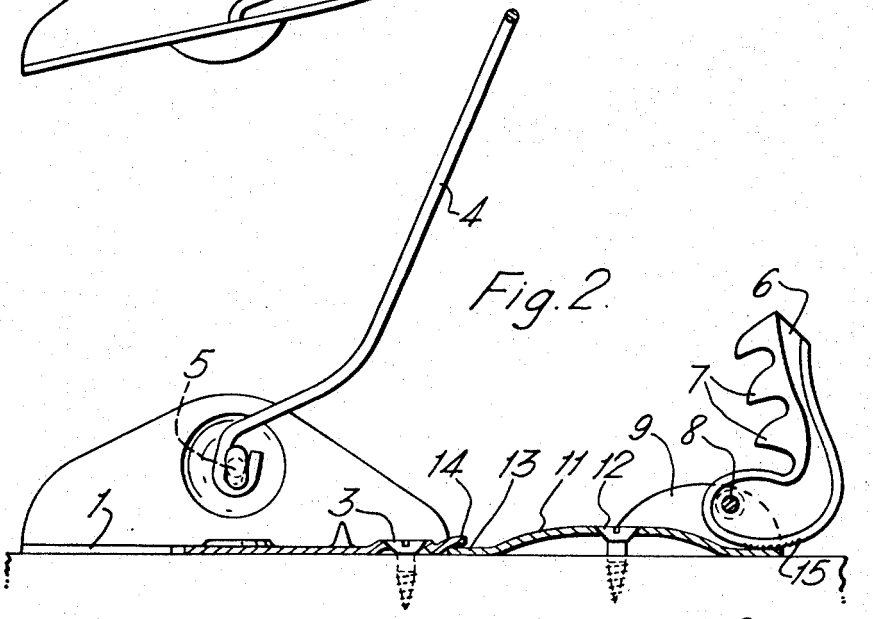
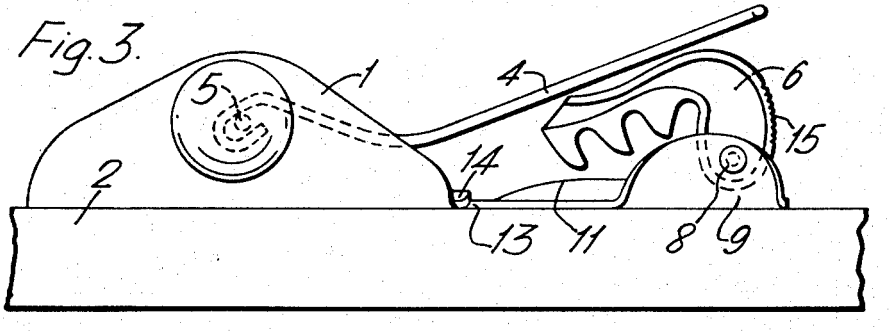


Fig. 3.



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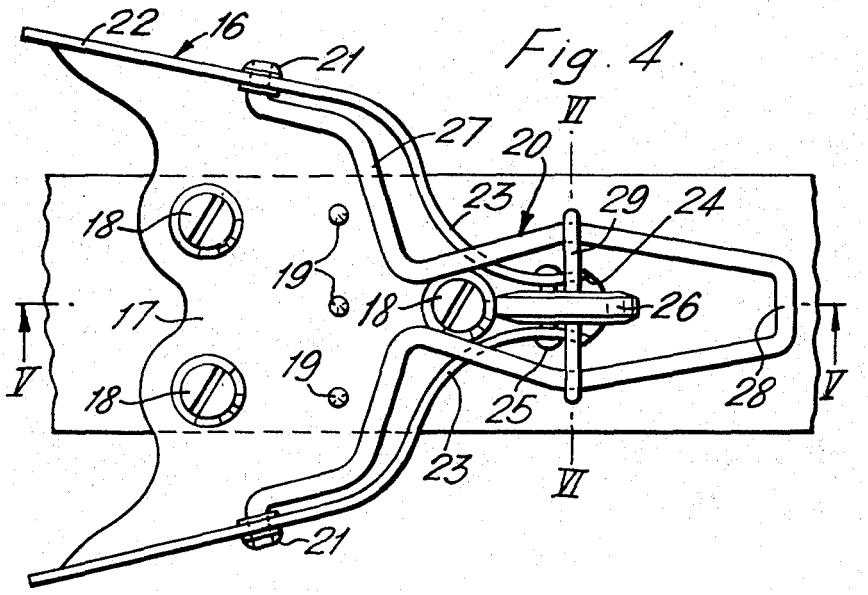

Fig. 4.

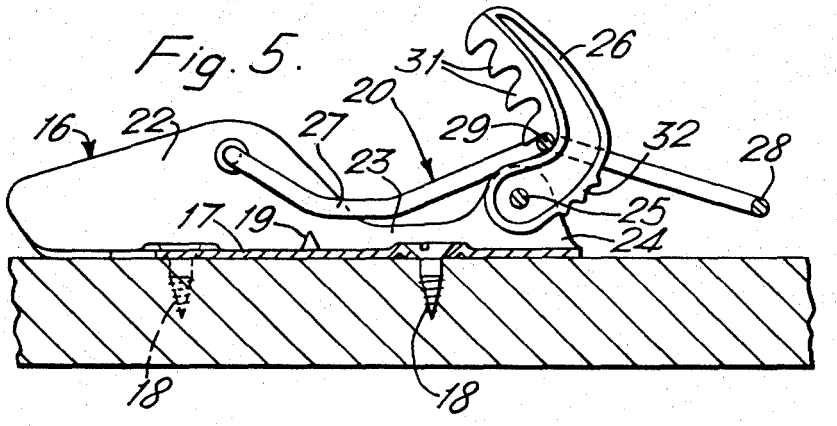

Fig. 5.

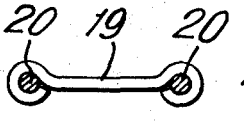

Fig. 6.

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SKI BINDING WITH CLAMPING BAIL

BACKGROUND OF THE INVENTION

The invention relates to ski bindings of the type which for pressing the sole rim down has a clamping bail, which at the rear is pivoted on the toe iron and which in a downwardly pressed position is held by a hook having a toothed rear edge for engaging the bail and pivoted in a support for rotation about an axis at a structurally defined distance from the pivotal axis of the bail. Bindings of this kind are known for example from the printed specification U.S. Pat. No. 3,481,618 belonging to the applicant.

A drawback in toe bindings of the type with clamping bail and keeping hook is that during transport both the bail and the hook may hang loosely and be exposed to strokes so that the bail may get detached or hooked, or the hook may be damaged.

SUMMARY OF THE INVENTION

According to the invention this drawback is eliminated in bindings of the kind mentioned in the preamble while benefiting from the fact that the pivots of keeping hook and toe iron are structurally fixed relative to each other. The invention primarily consists in that the hook has on its front side a corrugated edge which in an in-turned position extends substantially vertically and at such a distance from the pivotal axis of the bail that a transverse portion of the bail can be pressed fixedly onto it when the binding is not in use. Hereby it is obtained that the bail will constantly extend close to the ski during transport, so that it will not be caused to spring off by possible strokes, and the hook will in this position be turned down towards the ski and at the same time be protected by the bail, so that it will not be deformed by incautious handling.

The invention may be carried out in various ways. Thus, the structural fixation of the distance of the hook pivot from the pivotal axis of the bail does not by necessity have to be achieved by making the hook support integral with the toe iron, as it is also possible to achieve it by means of an abutment between toe iron and hook support. The transverse portion of the bail engaging the corrugated edge may most conveniently be the same portion which in the position of use engages the toothed rear edge of the hook. However, this does not necessarily have to be the bight portion of the bail as in the usual design, but may also be a cross-bar as described in detail below.

The invention will be more fully described in the following description of embodiments illustrated in the accompanying drawings.

In the drawings:

FIG. **1** is a top view of the binding in mounted position with the bail turned up and the keeping hook turned forward in a first embodiment;

FIG. **2** shows the same in central vertical longitudinal section;

FIG. **3** is a side view of the binding in mounted position with the bail turned forward and the hook turned in;

FIG. **4** is a top view of another embodiment of the binding in the position of use;

FIG. **5** shows the same in vertical longitudinal section along the line V—V in FIG. **4**;

FIG. **6** is a cross-sectional view of the bail taken along the line VI—VI in FIG. **4** with a cross-bar mounted thereon.

DESCRIPTION OF THE EMBODIMENTS

The binding shown in FIGS. **1** to **3** comprises a toe iron **1** made in one piece and attached to the ski **2** by three screws **3**. The resilient clamping bail **4** has as usual a considerable length and is supported on the toe iron lugs by pivots **5**. The keeping hook **6**, which on its rear side has teeth **7** for adjustably keeping the bail **4** in a downwardly pressed position, is mounted on a pivot **8** in a support **9**. The latter has behind the pivot **8** an upwardly bulged central portion **11** having a hole for a fixing screw **12**, and is further extended rearwards by a lug **13** engaging under a raised portion **14** at the forward edge of the bottom plate of the toe iron, whereby the support **9** is locked against unintentional lateral rotation in spite of the fact that it is fixed with only a single screw. The front edge of the keeping hook **6** is in its lower portion, which extends substantially vertically in an in-turned position of the hook as shown in FIG. **3**, made with a corrugated shape as shown at **15** and extends here at such a distance from the pivots **5** of the bail **4** that when the latter is pressed down, its bight portion will resiliently engage the corrugated edge **15** and thereby be kept firmly in position when the binding is not in use.

The binding shown in FIGS. **4** to **6** is again of the toe binding type having an integral toe iron **16**, the bottom plate **17** of which is attached to the ski with three screws **18** and is provided with points **19** which in cooperation with a fitting on the boot shall lock the same against longitudinal motion. The clamping bail **20** is with outwardly extending end portions pivoted in hollow rivets **21** in the toe iron lugs **22**, which have forward extensions in the form of shallow flanges **23** extending inwards of the ski and further forwards so as to form a support **24** carrying a pivot **25** for the hook **26**. The legs of the bail **20** extends forwards and downwards from their pivots and further substantially horizontally inwards in portions **27**, which will engage the top of the sole rim, and further forwards on either side of the hook support and merge into a bight portion **28** at a considerable distance in front of the latter. On either side of the hook support the bail legs form downwardly and inwardly open angles, and at this location they are interconnected by a cross-bar **29** which consists of thinner wire stock than the bail **20** and is bent at its extremities so as to form eyelets clamped around the legs of the bail as shown in FIG. **6**, so that the cross-bar will be located at the same level as these at the location of the bends.

The bends at the cross-bar **29** are located so that the cross-bar can be selectively engaged by adjusting notches formed between teeth **31** at the rear edge of the hook **26** in the normal manner. As usual, the teeth are shaped so that in the position of use a further downward pressure on the bail **20** will cause the latter, or in this case rather the cross-bar **29**, to exert a sloping-plane action so that the hook **26** is swung forwards and can fall down onto the ski in front of the pivotal support—for which there is room behind the bight **28**—so that the bail can be swung up freely. Due to the reduced dimension of the cross-bar **29** it has been

possible to make the spacing of the teeth smaller than usual, with four notches instead of three.

For transport and storing purposes the hook **26** can in an up-turned position of the bail **20** be turned backwards onto the bottom plate **17**, and by turning the bail down the cross-bar **29** can then be made to engage a corrugated front edge **32** of the hook in a manner similar to that described for the first embodiment.

Due to the fact that the bail forms downwardly open angles at the bends it will at least in its lowermost adjusted positions have a downward slope in front of the hook as shown in FIG. **5**, so that it will be particularly well suited for removing obstacles. However, the slope is not so pronounced as to permit the bight **28** to engage the top face of the ski and hence prevent the bail from being released by downward pressure even from the lowermost engagement position shown, the lowermost position of the bail being still determined by engagement of the cross-bar with the base portion of the hook in the released position of the latter.

From the accompanying drawing it will be apparent how the front portion of the bail will be particularly easily accessible for pressing the bail down for release by means of the other foot or ski.

Mounting and dismantling of the bail **20** in its supports **21** takes place by lateral compression of the bail behind the cross-bar **29**, which here together with the front portion of the bail constitutes a stiffening quadrangle, which in connection with the fact that the bail itself may be made relatively rigid, effectively resists unintentional lateral compression, so that in spite of the extremely simple form of pivotal support the bail is prevented from falling off. In that connection it is convenient for further safety to make the bail behind the cross-bar **29** have an outward spring bias, that is that it has a greater spacing of its pivotal ends in free than in mounted condition. This fact also contributes in securing the cross-bar **29** against displacement along the bail, the bias in connection with the inwardly open angles at the bends resisting displacement away from the angle apexes.

What I claim is:

1. A ski binding having a toe iron with a bottom plate and upstanding lateral lugs, a clamping bail adapted to press the sole rim down and pivotally mounted in said toe iron lugs, and a hook having a toothed rearwardly facing edge for engaging said bail, said hook being pivotally mounted in a support on an axis at a structurally defined distance from the pivotal axis of said bail, said hook having a corrugated edge along its front side which extends substantially vertically in an inwardly turned position of the hook and is at such a distance from the pivotal axis of the bail that a transverse portion of the bail can be pressed firmly onto it when the binding is not in use.

2. A ski binding as claimed in claim **1**, wherein said transverse portion of said bail is disposed to engage the toothed edge of the bail in the position of use.

3. A ski binding as claimed in claim **2**, wherein said support is attached by one screw only and includes a rear end portion in engagement with said bottom plate of said toe iron to prevent lateral rotation.

4. A ski binding as claimed in claim **3**, wherein said support includes an upwardly bulged portion having a screw hole for receiving said one screw.

5. A ski binding as claimed in claim **4**, wherein said screw hole is located behind the pivot of said hook.

6. A ski binding as claimed in claim **2**, wherein the bight portion of the bail in a forwardly turned position extends in front of the hook, and said bail is provided with a rigid cross-bar suitably located for engaging the hook.

7. A ski binding as claimed in claim **6**, wherein said cross-bar is in the form of a rod having its ends clamped around the legs of the bail at a bend.

8. A ski binding as claimed in claim **7** wherein the legs of the bail form inwardly facing angles at the bends.

9. A ski binding as claimed in claim **8**, wherein said bail forms a downwardly facing angle at the bends, so that its front portion slopes downwardly in its lowermost position, which is defined by engagement of the cross-bar with the base portion of the hook in released position.

10. A ski binding as claimed in claim **6**, wherein said bail has an outward spring bias behind the cross-bar and includes outwardly bent end portions supported in said toe iron lugs.

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