United States Patent [19]

Kubelka

[11] **3,838,867**

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[54] **SKI BINDING**

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[73] Assignee: **Gertsch AG,** Zug, Switzerland

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[30] **Foreign Application Priority Data**

July 13, 1972 Austria 6009/72

[52] **U.S. Cl.** ..... **280/11.35 E**

[51] **Int. Cl.** **A63c 9/086**

[58] **Field of Search** 280/11.35 D, 11.35 E, 11.35 G, 280/11.35 V

[56] **References Cited**

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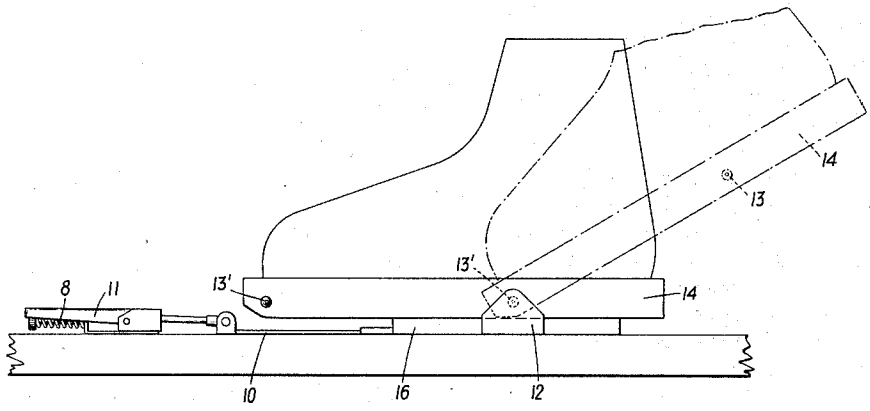
Attorney, Agent, or Firm—Woodhams, Blanchard and Flynn

[57] **ABSTRACT**

Releasable ski binding. In a ski binding adapted for releasably gripping pins projecting laterally from the sole of the ski boot, there is provided a pair of pin engaging devices for cooperating with said pins in such a manner that movement of the pins away from the ski will urge said pin engaging devices oppositely from each other for disengagement from the pins. A rocking lever is centrally mounted to the ski on an axis fixed with respect thereto and said pin engaging devices are pivotally mounted at the rearward end of said lever. A pair of links are pivotally mounted at the forward end of said devices and pivotally and slidably mounted in the forward end of said rocking lever. Resiliently supported cradle means are provided for normally holding the connected forward ends of said links in a central position, such holding keeping said pin engaging devices normally in boot retaining position against the ski and rearward movement of said cradle permitting said devices to move laterally for releasing said boot. The pin retaining devices may engage pins positioned either centrally of the boot for downhill skiing or at the toe of the boot for cross-country skiing.

4 Claims, 4 Drawing Figures



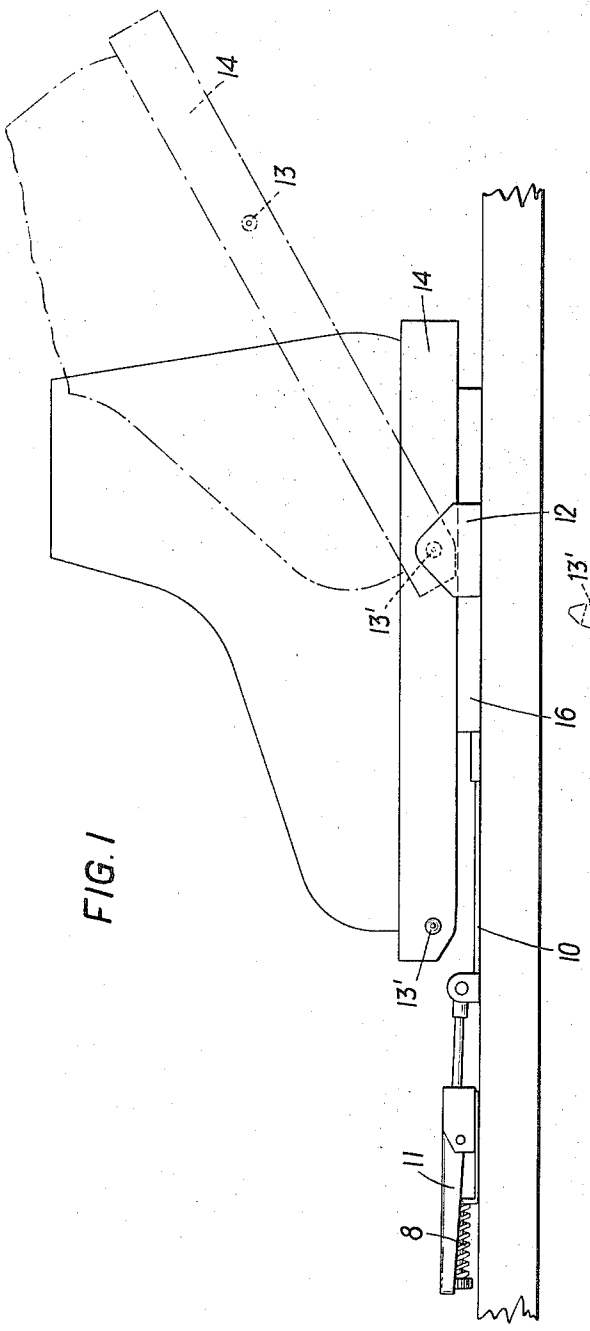

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FIG. 1

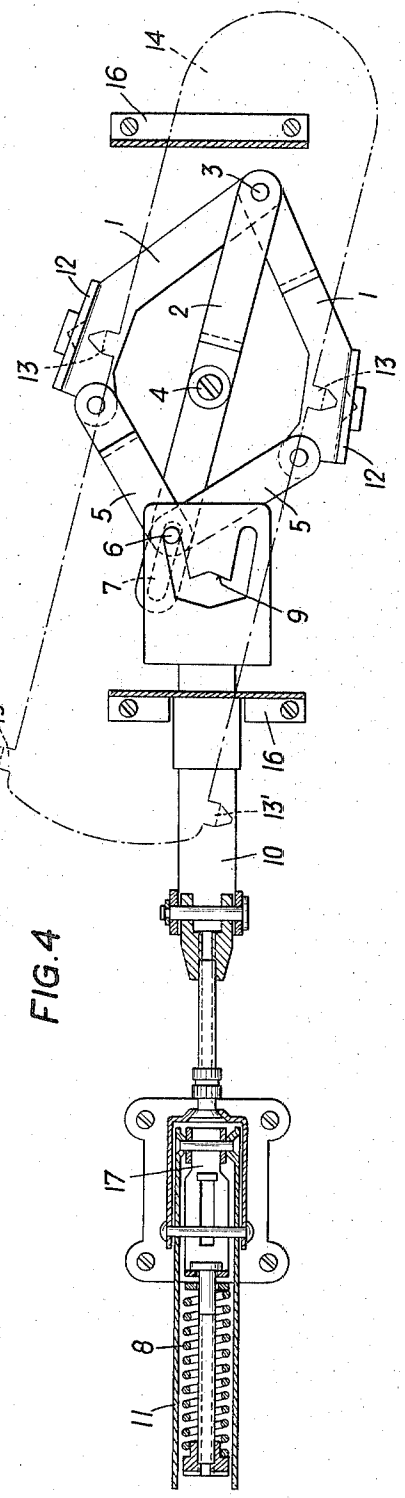
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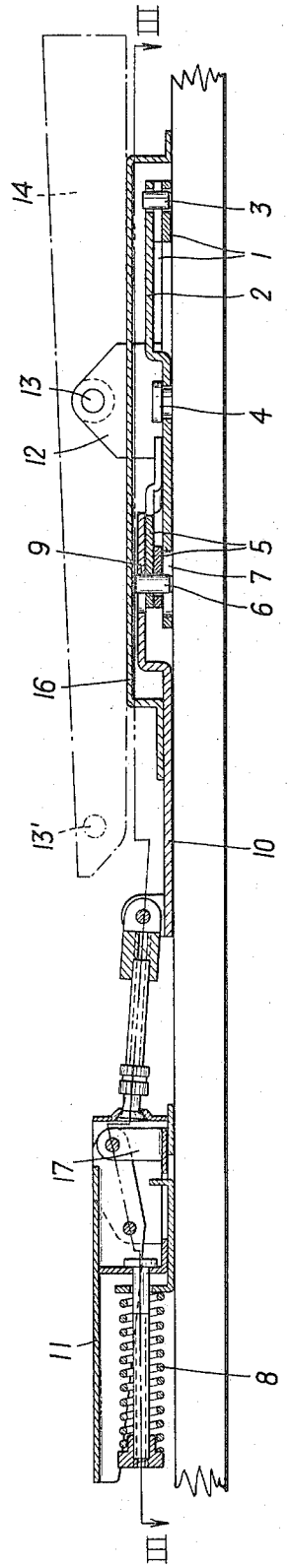
FIG. 4


III
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III

FIG. 2

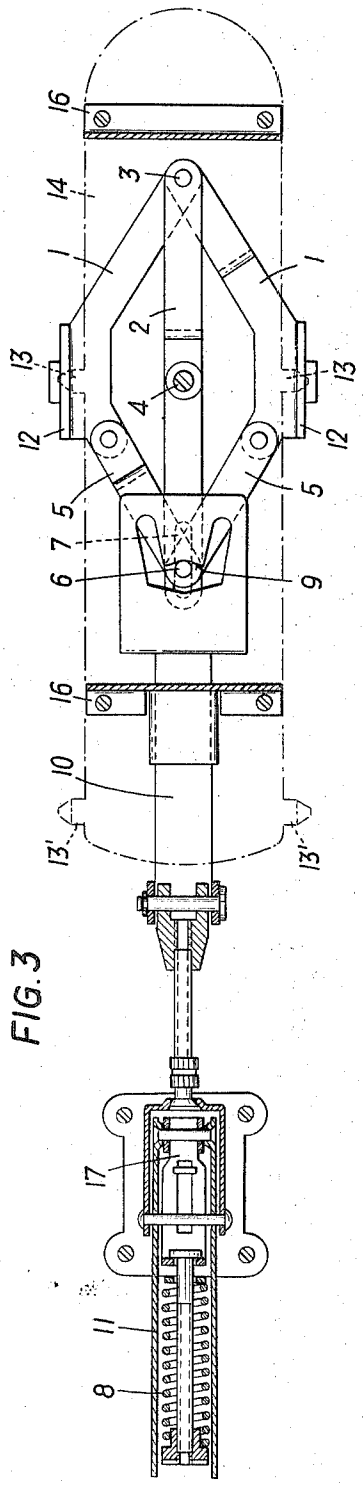
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FIG. 3

SKI BINDING

The invention relates to a ski binding which when an overload occurs releases the ski boot, said binding comprising two lever mounted gripping plates provided oppositely of each other at each side of the ski boot and supported swingably against a spring force with respect to the lever ends on the ski below the ski boot sole. Suitable abutments are provided on both sides of the ski boot and are cooperable with said plates.

A ski binding is known in which the gripping means are arranged on swingable levers which are positioned below the boot sole on the ski. If an excessive load occurs, the gripping means with the levers can swing outwardly against a resilient force. Abutments are provided on the ski boot, with which abutments the gripping means engage. During a twisting release, the ski boot or the ski boot sole must in a pliershke manner swing open one of the levers in the direction of turning and the other lever against the direction of turning. This not only makes the release more difficult but also imposes a certain instability from the arrangement of the gripping means parts on the free ends of the lever.

The purpose of the present invention is to avoid these disadvantages and the invention is characterized in that the levers supporting the gripping means are hinged with their one ends approximately on the end of a rocking lever which in turn is supported pivotably about an axis fixed with respect to the ski and are connected hingedly with their other ends to guide links which have a common axis on the remote ends, which axis is defined by a pin supported movably in a longitudinal slot arranged at the other end of the rocking lever and on a spring urged means defining a locking recess. Such provision of the guide links assures a secure holding and avoids instability. The entire construction permits also a swinging of all parts about the pivot axis of the rocking lever until the release of the pin from the spring urged locking recess.

The subject matter of the invention is illustrated exemplarily in the drawings by one embodiment.

In the drawings:

FIG. **1** illustrates the arrangement of a ski boot on the ski,

FIG. **2** is a central cross-sectional view of the binding mechanism,

FIG. **3** is a top, partially cross-sectional view of FIG. **2,** same being taken essentially on line III—III of FIG. **2** and

FIG. **4** is the same illustration as FIG. **3,** however, in a tilted position.

As seen in FIG. **1,** the ski boot is held on the ski by lateral gripping plates **12** which engage the ends of a pin **13** extending through the boot sole **14** and projecting beyond same on both sides thereof. The gripping plates **12** are connected by suitable linkage to the tensioning lever **11,** which is loaded by the spring **8,** by means of mechanism which is protected by the cover **16.** By swinging the tensioning lever **11** upwardly, the gripping plates are swung out laterally and thus the pin **13,** and with it the ski boot, is released.

For cross-country skiing the gripping plates **12** grip the ends of the pin bolt **13'** which is arranged near the tip of the boot and has the same dimensions. In such position the boot can then, as necessary for cross-country skiing, be swung upwardly, as illustrated by dash-dotted lines in FIG. **1.** It is thus possible to use the device for both down-hill skiing and for cross-country skiing.

As shown in FIGS. **2** to **4,** the gripping plates **12** are arranged on gripping levers **1** and are supported pivotably about the axis **3.** The axis **3** is carried by a rocking lever **2** which is arranged pivotably about a further axis **4** which axis is fixed relative to the ski. Guide links **5** are pivotally connected to the gripping levers **1.** Said guide links are connected by a single pin **6** on the ends thereof remote from the gripping levers **1.** This pin **6** movably engages a longitudinal slot **7** at the other end of the rocking lever **2.** Further, the pin **6** also engages a locking recess **9** forming a locking cradle.

The part forming the locking recess **9** is connected hingedly through a linkage **10** to the tensioning lever **11** which is pivotally supported on a support **17.** Said latter is in turn movable against the force of the tightening spring **8.**

If an upwardly directed force now occurs, for example as during a forward fall, the parts of the pin forming the abutments **13** and projecting beyond the ski boot sole **14** are pulled upwardly. In so doing they urge the two gripping plates apart so that they swing open laterally about the axis **3.** This causes the pin **6** to be pulled backwardly by the two guide links **5** and thus also the locking plate **9.** Same in turn acts through the linkage **10** to tension the tightening spring **8.** During a twisting fall, the entire device first pivots about the fixed axis **4** until the pin **6** is released from the part of the locking recess **9** which forms the locking cradle. It can then move backwardly along one of the two U-shaped legs of the locking recess **9** and in the longitudinal slot **7** of the rocking lever **2,** which position can be seen in FIG. **4.** The ski boot or the abutments **13** are thus released from the gripping plates **12.** Of course the binding also opens during diagonal falls, even though the force is not directed either directly upwardly or directly laterally.

The invention is not limited to the illustrated exemplary embodiments. A number of modifications exist which lie within the scope of the invention. For example it would also be possible to use a safety tensioning means which, if desired, releases at a predetermined upwardly directed force, for example during a fall forwardly, so that here too the two gripping plates can swing freely outwardly starting at a certain point, namely when the tensioning lever swings upwardly.

Although a particular preferred embodiment of the invention has been disclosed above for illustrative purposes, it will be understood that variations or modifications thereof which lie within the scope of the appended claims are fully contemplated.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. In a ski binding which, upon occurrence of an overload, releases the ski boot, said ski binding comprising two gripping plates each being mounted on the end of a pivotally supported lever positioned below the sole of said ski boot, said gripping plates being positioned laterally of said ski boot and oppositely to one another and spring means for resisting a pivotal movement of said levers and said gripping plates positioned on the ends of said levers relative to said ski, abutment means provided on both sides of said ski boot for cooperation with said gripping plates, the improvement

comprising wherein said levers are hinged with their respective one ends approximately at one end of a rocking lever which in turn is supported pivotably about a pin fixed to said ski and are connected hingedly at their other respective ends to guide links which have a common axis defined by a pin on the ends remote from said levers, said spring means including means defining a resiliently supported locking recess, said pin being supported movably in a longitudinal slot arranged at the other end of the rocking lever and in said locking recess.

2. The improved ski binding to claim **1**, wherein said spring means includes a spring; and

wherein said locking recess is constructed approximately U-shaped, whereby the legs extend in a direction away from the tractile direction of said spring and, in the center of said U-shaped locking

recess, a locking cradle is formed.

3. The improved ski binding according to claim **1**, wherein said locking recess is arranged on a linkage movable longitudinally of said ski, which linkage is connected to a spring loaded tensioning lever.

4. The improved ski binding according to claim **1**, wherein said gripping plates can be brought into engagement alternately with multiple abutment means on the ski boot sole, said abutment means comprising a pair of conventional pins which extends through said boot sole and project therebeyond on both sides thereof, one pin being provided in the central or slightly rearward zone of said boot sole for downhill skiing and another pin arranged at the toe of said ski boot sole for cross-country skiing.

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