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Smolka et al.

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[54] **SPRING LOCK**

[75] Inventors: **Thomas Gordon Smolka,** Wien-Mauer; **Franz Hrachowitz,** Wien, both of Austria

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

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

[51] **Int. Cl.** **A63c 9/00**

[58] **Field of Search** ..... 280/11.35 T

[56] **References Cited**

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Primary Examiner—Robert R. Song

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

[57] **ABSTRACT**

Adjustment mechanism for a safety ski binding. Adjusting means are provided for adjusting the tension of the control spring in a safety ski binding, said adjustment means having both a coarse adjustment and a fine adjustment. The fine adjustment is accessible to the user from the outside of the binding housing but the coarse adjustment is accessible only to a person possessing suitable tools and from within such housing. The spring seat is threaded onto a screw which is coaxially received into a further screw which latter is threaded into the housing. The latter screw provides the fine adjustment and the first-mentioned screw provides the coarse adjustment.

9 Claims, 3 Drawing Figures

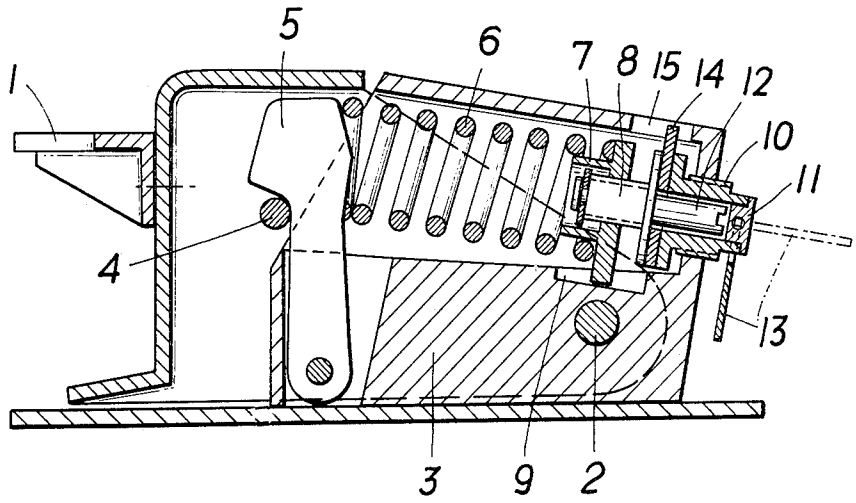


FIG. 1

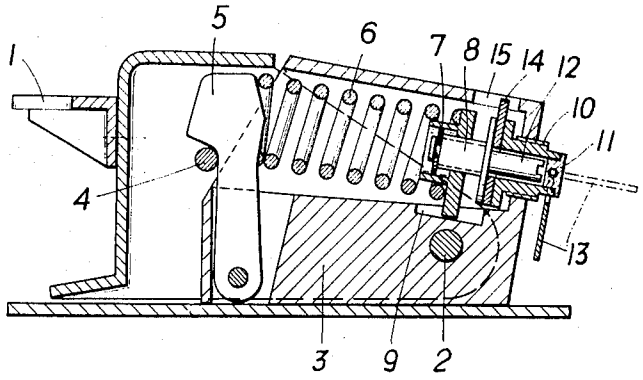


FIG. 2

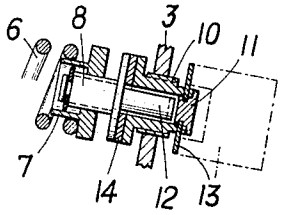
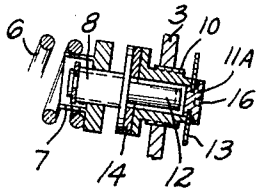


FIG. 3



SPRING LOCK

The invention relates to a spring lock, particularly for releasible ski bindings which for changing the effective power of the locking spring has an adjustable spring abutment which is equipped with both a fine adjustment mechanism and with a rough adjustment mechanism. Only the fine adjustment mechanism is accessible from outside and the rough adjustment mechanism is provided inside the housing of the spring lock and inaccessible from the outside. Such a means is shown in U.S. Ser. No. 111,874 filed Feb. 2, 1971, by Thomas Gordon Smolka and Johann Zelinka and assigned to the same assignee as the present invention, now U.S. Pat. No. 3,713,664. However, in the constant effort to improve the design and construction of safety ski bindings the present invention has been conceived to provide a particular improved embodiment of the invention shown and described in the original abovementioned application. To this end the present invention embodies a non-rotatable spring abutment which is nevertheless supported for movement in the axial direction of the spring by means of a rotatably supported screw, which screw is supported on a further threaded part to form the fine adjustment mechanism.

The subject matter of the invention is illustrated in the drawing by an exemplary embodiment shown in which:

FIG. **1** is a central cross-sectional view of a heel binding,

FIG. **2** is a top, central sectional view of the adjusting mechanism of the spring lock which is provided in FIG. **1**, and

FIG. **3** illustrates a modified fine adjustment feature.

As will be apparent from the drawing, the clamp **1** can be pivoted about the axis **2** of the base member **3** and has a locking element **4** which here comprises a pin. The locking member **5**, here a control cam, grips over the locking element **4** under the pressure of the spring **6**. The locking member **5** is also supported pivotably on the base member **3**.

The spring **6** rests with its one end against the spring abutment **7** which is arranged on the thread of a bolt **8** and can be moved in the longitudinal direction of the spring. Said abutment **7** is, however, secured against rotation since an extension thereon is received into a recess **9** of the base member **3**. The bolt **8** is supported on a further threaded part **10** which is screwed into the base member **3**. If the cover **11** is removed by means of a tool, the extension **12** of the bolt **8** (which extension extends into the threaded part **10**) can be rotated by means of a screw driver. In this manner the abutment **7** is caused to move appropriately and thus a rough or large adjustment can be made by the man skilled in the art.

A swingably supported operating lever **13** is provided on the threaded part **10**, the pivotal axis of which operating lever is positioned approximately transversely to the axis of rotation of the threaded part. If the operating lever **13** is moved into the position which is illustrated by dashes in the figures, the threaded part **10** can be rotated in a simple manner. Thus, depending on the number of rotations, or partial rotations, of the threaded part **10**, the bolt **8** and the spring abutment **7** will move in longitudinal direction of the spring axis and thereby effect the desired fine or small adjustment. Said fine adjustment mechanism can thus be operated

by the user but such adjustment is only possible in a narrow range.

The rough adjustment mechanism which is provided for adjustment to the skiing capability and the weight of the user can only be made by the man skilled in the art. Only a small regulating range is left for the user which, of course, considerably reduces the danger of injury. Thus, the fine adjustment mechanism is limited so that it is much less than the range for the coarse or large adjustment. Also arbitrary adjustments or adjustments through third persons are not possible over a large range. An indicator **14** is provided between the threaded part **10** and the bolt **8**, which indicator extends into a slot **15** of the base member **3** and shows the fine adjustment as selected.

The invention is not limited to the illustrated exemplary embodiment. A number of modifications exist which lie within the scope of the invention. For example, and referring to FIG. **3**, in place of the operating lever **13** a different operating means could be provided, for example by providing a screw driver slot **16** in the cover **11a**. It is also possible to operate the fine adjustment mechanism by a knurled ring or disk. It is of course also possible to use the inventive spring lock in a front jaw or in a safety tensioning means.

We claim:

1. In a releasable ski binding device having a locking element and first adjustable means for altering the effective force of a spring, the force of which is to be overcome in order to release said ski binding device, said first adjustable means including adjustable abutment means and first adjusting means for adjusting said adjustable abutment means toward and away from said locking element, said spring being positioned between said adjustable abutment means and said locking element and under a pretension so that the magnitude of the pretension of said spring is altered during an adjustment of said first adjusting means and second adjustable means for altering said effective force of said spring and thereby the force required to release said ski binding device, wherein the improvement comprises means defining a housing for enclosing said first adjusting means and releasably secured cover means for preventing access to the interior of said housing means and said first adjusting means, said housing means and said cover means when connected together defining said second adjustable means for facilitating an adjustment of said effective force of said spring but to a degree less than said first adjusting means.

2. The improvement according to claim **1**, wherein said housing means is coaxial with said first adjusting means and includes means for supporting same for a coaxial reciprocating movement toward and away from said locking element; and

operating means on said cover means releasably secured to said housing means for facilitating said adjustment of said effective force of said spring to a degree less than said first adjusting means.

3. The improvement according to claim **2**, wherein said housing means includes means defining an opening coaxial with said first adjusting means; and

wherein said cover means includes securing means for securing said cover means in said opening against a relative rotation with respect to said housing means during operation of said operating means.

4. The improvement according to claim 3, wherein said operating means on said cover means is an operating lever swingably secured to said cover means.

5. The improvement according to claim 3, wherein said operating means on said cover means is slot means adapted to receive bladed tool means therein for adjustment of said housing means.

6. A releasable ski binding device, comprising:

base means;

a locking element;

first adjustable means for altering the effective force of a spring which urges said locking element into a locked position, the force of said spring to become overcome in order to release said locking element and, therefore, said ski binding device, said first adjustable means including a rotatable threaded bolt having a radially extending flange intermediate the ends and an abutment threadedly engaged on said threaded bolt and movable toward and away from said locking means upon a rotation of said threaded bolt to thereby alter said effective force of said spring mounted between said abutment and said locking element;

second adjustable means coaxial with said threaded bolt for altering said effective force of said spring and thereby the force required to release said ski binding device, said second adjustable means including a rotatable hollow threaded member the interior of which is adapted to receive one end of said threaded bolt therein, said hollow threaded member being threadedly engaged with said base means and engaged with said flange and adapted to move toward and away from said locking element upon a rotation of said hollow threaded member to effect a movement of said abutment toward and away from said locking element; and

releasable cover means releasably secured to said hollow threaded member for preventing access to said interior of said hollow threaded member and access to said one end of said threaded bolt.

7. A releasable ski binding according to claim 6, wherein said cover means includes a swingable operating lever to facilitate a manual rotation of said hollow threaded member.

8. A releasable ski binding according to claim 6, wherein said cover means includes means defining a slot adapted to receive a bladed tool means therein for facilitating a manual rotation of said hollow threaded member.

9. A releasable ski binding according to claim 6, wherein said one end of said threaded bolt has means defining a slot therein adapted to receive a bladed tool means therein when said cover means has been removed.

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