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Gertsch et al.

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[54] **RELEASABLE SKI BINDING**

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[52] **U.S. Cl.** ..... **280/11.35 K**; 280/11.3 W

[51] **Int. Cl.** **A63c 9/08**

[58] **Field of Search** ..... 280/11.35 C, 11.35 K, 280/11.35 R, 11.35 A, 11.13 W, 11.13 S

[56] **References Cited**

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[57] **ABSTRACT**

A releasable ski binding comprising a release plate having support means for the ski boot, the support means serving for selectively altering the inclination of the ski boot relative to the ski. The release plate is also equipped with adjustable holding means for the heel and sole of the ski boot.

7 Claims, 5 Drawing Figures

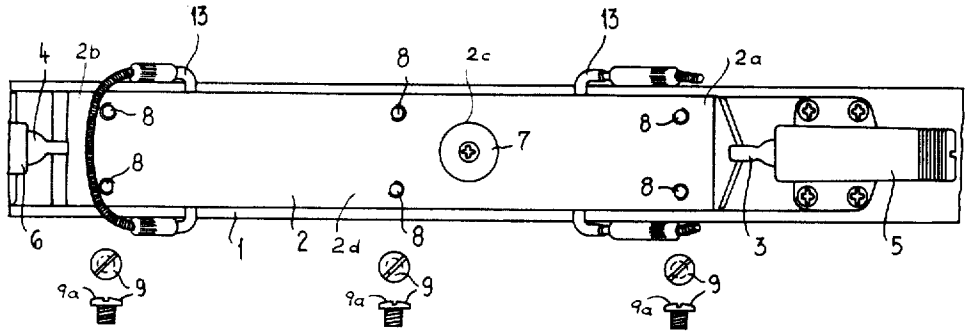

Fig.2

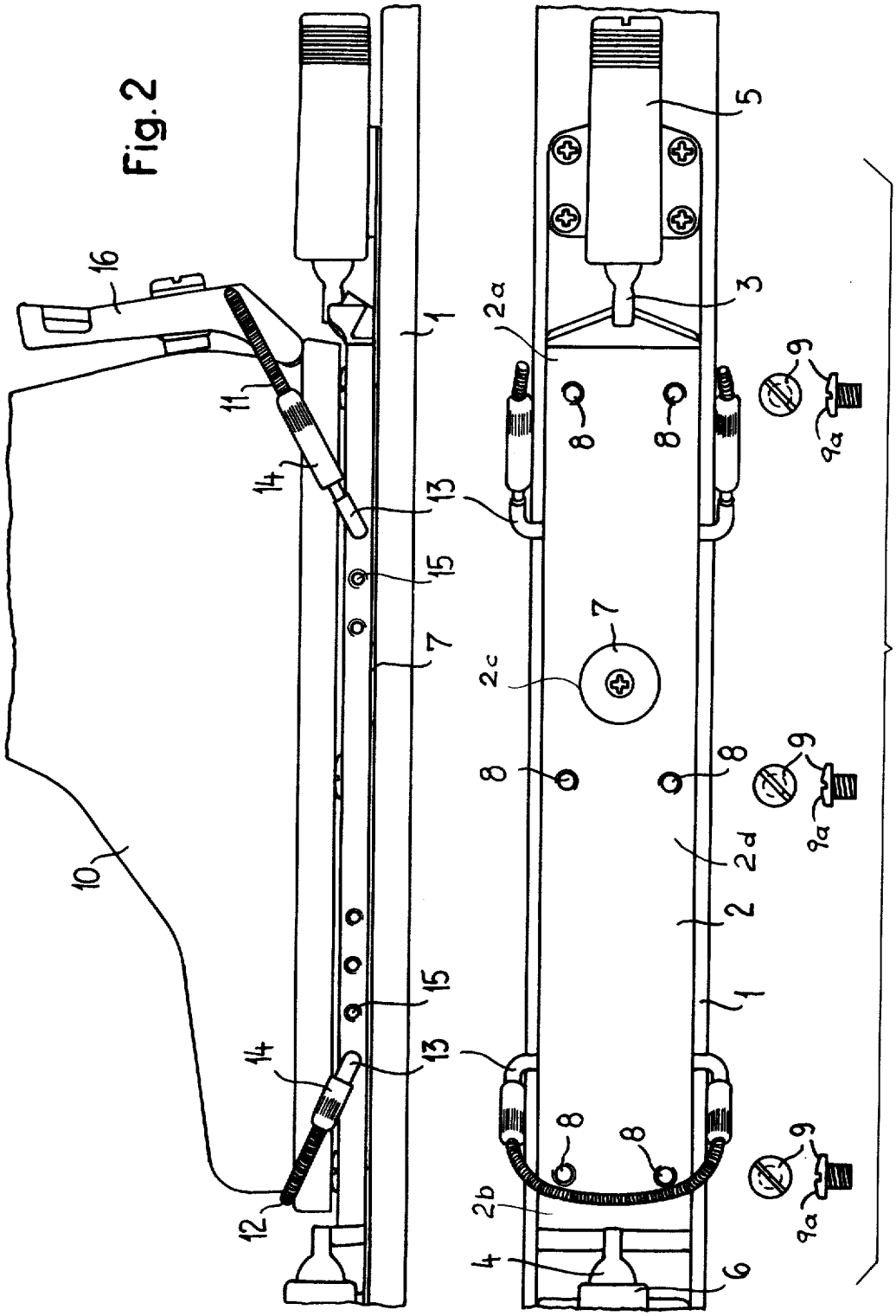

Fig.1

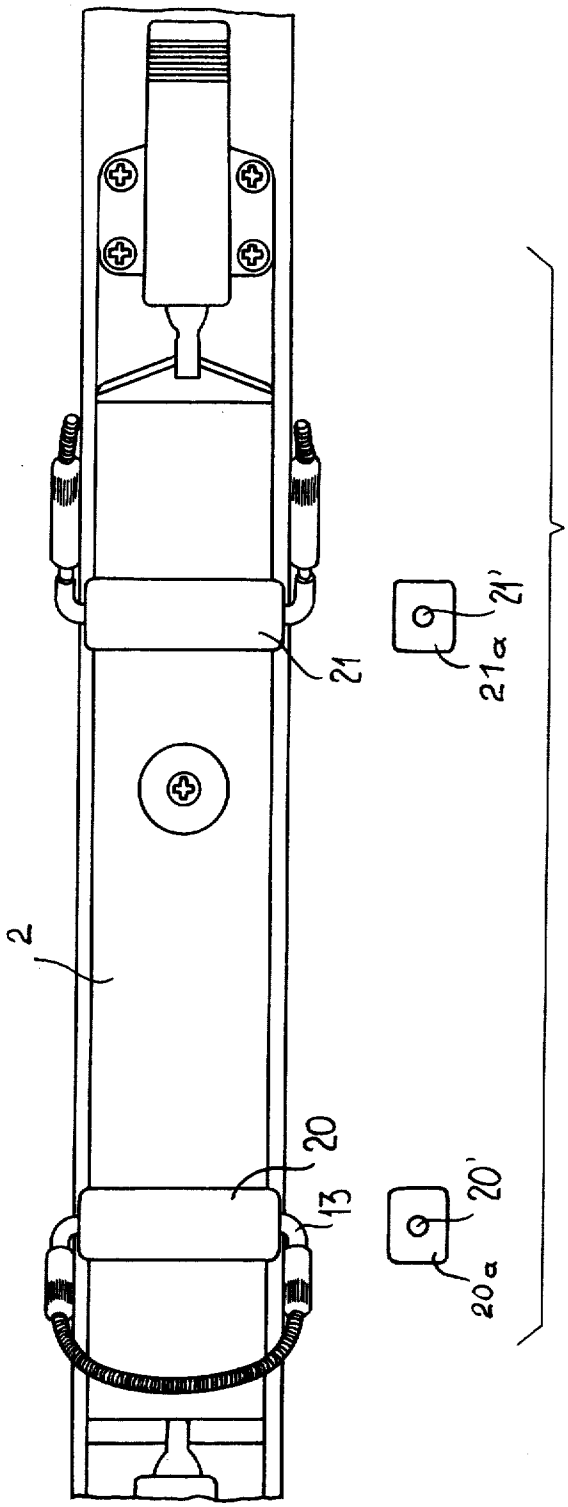

Fig.3

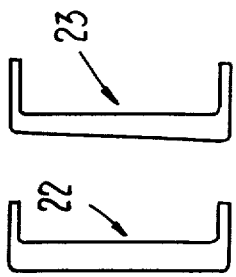

Fig.4

Fig.5

RELEASABLE SKI BINDING

BACKGROUND AND SUMMARY OF THE INVENTION

The present invention relates to a new and improved construction of releasable ski binding of the type incorporating a release plate releasably anchored at both of its ends to the ski against the action of spring force, the release plate being equipped with holding means for the heel and sole of the ski boot.

It is a primary object of the present invention to provide an improved construction of releasable ski binding which incorporates means permitting selective spatial positioning of the ski boot with respect to the ski, to thus provide for an improved individualized accommodation of the ski binding to the requirements of the skier.

Another and more specific object of the present invention relates to a new and improved construction of releasable ski binding incorporating a release plate and means providing for selective support action of the ski boot such that the inclination of the boot can be varied, as desired, with respect to the ski.

Now in order to implement these and still further objects of the invention, which will become more readily apparent as the description proceeds, the releasable ski binding of this development comprises a release plate equipped with means providing a support which can be adjusted to all sides for the ski boot with respect to its inclination relative to the ski. The release plate further is equipped with adjustable holding means for the heel and sole of the boot.

This construction of release plate permits adjusting to all sides the angle of inclination of the boot with respect to the ski, so as to be able to undertake corrections for the skier if, for instance, the skier has bowed legs (O-shaped legs) or else so-called X-shaped legs or to be able to allow the skier to adjust the release binding so that he can ski with a particular individual style or at least try out such style.

An appropriate construction of adjustable holding means for the heel or sole of the ski boot can be advantageously constituted by a respective bracket; the ends of each bracket are anchored at the release plate and the length between the anchoring locations can be adjusted. A further advantageous construction of the invention contemplates that the anchoring means of the brackets are adjustable not only in the lengthwise direction of the release plate but also in a direction transversely with respect thereto. In this way there is realized between the support means adjustable in inclination and the appropriately adjustable heel- and/or sole holding means a particularly beneficial "symbiosis" insofar as the holding means not only permit of every random inclination, but furthermore at the same time also allow for a random shifting of the supporting or tread surface of the ski boot and therefore a complete individual accommodation of the relationship between the skier and the skiis. In fact the ski boot can be inclined towards the one and/or the other side to a greater or lesser extent, as desired, and thus can be randomly shifted in the lengthwise direction of the ski, but also can be shifted or positioned laterally forwardly and/or rearwardly and also at an inclination. The adjustability of the ski boot relative to the ski exceeds these adjustment possibilities which can be realized with a universal joint.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be better understood and objects other than those set forth above will become apparent when consideration is given to the following detailed description thereof. Such description makes reference to the annexed drawings wherein:

FIG. **1** is a top plan view of a releasable ski binding incorporating a release plate, the adjustable support means of which are provided by support screws, wherein however the support screws have been conveniently shown in the disassembled position at the lower part of this FIG. **1**;

FIG. **2** illustrates the arrangement of FIG. **1** viewed from the side, further depicting a ski boot mounted in the releasable ski binding and the holding means engaging with the heel and the sole of such ski boot;

FIG. **3** is a variant construction of releasable ski binding, depicted similar to the showing of FIG. **1**, but in this case employing as the support means wedge-like members; and

FIGS. **4** and **5** illustrate further modified constructions of the wedge-like members.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Describing now the drawings, in the embodiment depicted in FIGS. **1** and **2** there is shown a releasable ski binding of the type incorporating a release plate **2** releasably retained to be movable to all sides at the ski **1**, by means of anchoring pins **3** and **4** engaging with the opposed ends **2***a* and **2***b* respectively, of the release plate **2**, as best seen by referring to FIG. **1**. The anchoring pins **3** and **4**, sometimes also known as locking pins, are pivotably mounted for movement to all sides in their associated housing **5** and **6** respectively. Each such anchoring pin **3** and **4** is subjected to the action of a non-visible spring arranged in its respective housing **5** and **6**, so that these anchoring pins normally assume the position depicted in FIGS. **1** and **2**, and thus retain the release plate **2** in its illustrated normal position on the ski **1**. Furthermore as far as the locking pin **3** is concerned, which is here shown mounted at the rear end **2***a* of the release plate **2** considered with respect to the ski boot **10**, this pin **3** cooperates with the release plate so as to also retain such against lateral movement until exceeding the permissible safety factor of setting of the binding. Moreover, with respect to the ski **1** itself the position of the release plate **2** is fixed by a pivot or plug pin **7** which fits into a bore **2***c* of the release plate **2** and in cooperation with such release plate **2** provides a plug-like releasable connection for the release plate at the ski **1**. The pivot pin **7** and bore **2***c* may be each advantageously of cylindrical shape. The release plate **2** can pivot about the pivot pin **7** and in the case of a load acting in the lengthwise direction of the ski also can raise away from such pivot pin **7** which is normally fixed to the top surface of the ski. Insofar as this portion of the releasable ski binding is concerned further details thereof constitute subject matter of our commonly assigned, copending U.S. application Ser. No. 353,329, filed Apr. 23, 1973, and entitled "Releasable Ski Binding" to which reference may be readily had and the subject matter of which is incorporated herein by reference.

Continuing, with the embodiment under consideration it will be recognized that the release plate **2** is

provided at both of its ends 2*a* and 2*b* as well as at its central region 2*d* with respective pairs of threaded recesses or bores **8** serving to receive support screws **9.** These support screws **9** in their entirety form support means for the ski boot **10,** the heel and sole of which bear upon the convex-shaped screw heads 9*a*. Consequently, it should be apparent that the ski boot **10** can be spatially positioned, e.g. tilted and/or canted as desired, to impart thereto a given desired inclination.

The heel and sole tip of the ski boot **10** are each connected via a holding member, here in the form of a respective bracket **11** and **12,** with the release plate **2,** and thus the boot can be securely urged against the support screws **9.** With the aid of the threaded anchoring spindles **13** and the threaded spindle sleeves or threaded nut members **14,** in each case arranged at the ends of the associated bracket **11** and **12,** it is possible to vary the length of such brackets in order to ensure for positive retention of the ski boot for any inclination thereof which it might assume. The spindles **13** selectively engage by means of their inwardly flexed threaded ends into one of the lateral threaded recesses or bores **15** provided in spaced relationship along the lengthwise extending edges of the release plate **2,** as best seen by referring to FIG. **2.** Owing to this construction the spindles **13** can be adjusted transversely with respect to the release plate **2,** wherein, on the one hand, it is possible to vary the mutual spacing of the anchoring means and, on the other hand, the brackets themselves can be displaced laterally with respect to the release plate **2.** As a result there is realized not only the possibility of accommodating the holding means to the form of the ski boot and its inclination, but the possibility of changing the position of the boot relative to the ski also horizontally, for instance to adjust such at an inclination. Since for each bracket there are provided a number of anchoring recesses or bores **15** the brackets and thus the tread surface of the boot **10** can be shifted in the lengthwise direction of the ski, and owing to the adjustability of the effective length of the brackets this shifting can be carried out so-to-speak through infinite adjustments. Moreover, the adjustment of the bracket length is dependent upon the desired holding force which —as is well known in this particular art— can be brought into effect for instance through the use of a clamping lever **16** arranged at the rear bracket **11.**

It should be readily apparent that owing to the described arrangement it is possible to carry out practically any desired random relative positional adjustment between the ski boot and the ski within those limits which come into practical consideration. In this way it is possible not only to carry out corrections which are necessitated by the anatomy of the skier, but also to try out adjustments which might be most suitable for the individual skier in question.

It should be understood that a greater number of supporting screws **9** than that shown could be provided at the edges of the release plate **2.** The screws **9** can be formed of plastic or the like or could possess a covering or coating formed of such material; instead of using screws with slotted heads they could also have hexagonal heads or the like, so as to be able to rotate such screws even when the ski boot is mounted on the release plate. They could also possess large surface heads or be combined in groups or in totality with a respective support element, for instance a flat or plate-shaped support element. Instead of using the screws it would be also possible to use other suitable support elements which can be adjusted in height or mutually exchangable support elements possessing different heights, such as wedges, double-wedges, shims and the like. All such elements in any event will provide a support for the ski boot which allows such boot to be adjusted to all sides with respect to the inclination that the boot assumes relative to the ski.

FIG. **3** illustrates such a modified arrangement of releasable ski binding viewed in top plan view, similar to the showing of FIG. **1,** wherein alongside of the actual releasable binding there have been shown details of certain of the components. In this case for the purpose of adjusting the inclination of the ski boot there are provided substantially U-shaped wedges **20** and **21** or equivalent structure which are mounted for instance in straddling relationship on the release plate **2.** In the legs **20***a* and **21***a* of such wedges **20** and **21** respectively, there are provided suitable holes or bores, as indicated by reference characters **20'** and **21'** respectively, which can be aligned with one of the holes **15** provided in the side edges of the release plate **2** and can be pierced by the flexed ends of the spindles **13,** so as to secure such wedges **20** and **21** to the release plate. Depending upon the inclination of the wedges themselves, as indicated for instance by the different shaped or inclined wedges indicated by reference characters **22** and **23** and appearing in FIGS. **4** and **5** respectively, the lateral inclination as well as the inclination of the skier towards the front and the rear can be altered or influenced.

While there is shown and described present preferred embodiments of the invention, it is to be distinctly understood that the invention is not limited thereto, but may be otherwise variously embodied and practiced within the scope of the following claims.

What is claimed is:

1. A releasable ski binding for use with a ski and a ski boot having a heel, sole and bottom tread, comprising a release plate, anchoring means for releasably anchoring the release plate at its ends to the ski, support means for the ski boot provided on the top surface of the release plate acting against the bottom tread of the ski boot for enabling adjustment of the inclination of the ski boot relative to the ski in the lengthwise direction of the ski and canting of the ski boot relative to the ski in the transverse direction of the ski, and adjustable holding means for the heel and sole of the ski boot mounted on said release plate for adapting the holding means to the assumed inclination and canting of the ski boot brought about by the action of the support means.

2. The releasable ski binding as defined in claim **1,** wherein said support means are adjustable for varying the inclination and canting of the ski boot relative to the ski.

3. The releasable ski binding as defined in claim **1,** wherein said support means comprise a plurality of elevationally adjustable support elements.

4. The releasable ski binding as defined in claim **1,** wherein said support means comprise a plurality of exchangeable support elements which can be exchanged for different support elements having a different height.

5. The releasable ski binding as defined in claim **1,** wherein said release plate is provided with recesses, said support means comprising support elements anchored in said recesses.

6. The releasable ski binding as defined in claim **5,** wherein said support elements comprise screws.

7. The releasable ski binding as defined in claim **5,** wherein said support elements comprise wedge means.

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