

(51)

Int. Cl.²: A63C 9-085

(19) **FEDERAL REPUBLIC OF GERMANY**

[emblem]

GERMAN PATENT OFFICE

[stamp:] [illegible]

[right margin:] **DE 23 64 298 A1**

(11)

Offenlegungsschrift 23 64 298

[published patent application]

(21) Application number: P 23 64 298.0

(22) Filing date: December 22, 1973

(43) Disclosure date: June 26, 1975

(30) Union priority:

(32) (33) (31)

(54) Title: Releasing/Retaining Device for Safety Ski Bindings

(71) Applicant: Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH, 7250
Leonberg

(72) Inventor: Sittmann, neé Vöster, Brigitte, 7000 Stuttgart

[left margin:] **DE 23 64 298 A1**

[stamp:] ORIGINAL INSPECTED

6.75 509 826/589 8/70

DIPL. ENG. GRÄMKOW DR. MÜLLER-BORÉ
DIPL. PHYS. DR. MANITZ DIPL. CHEM. DR. DEUFEL DIPL. ENG. FINSTERWALD
PATENT ATTORNEYS
7 STUTTGART 50 (BAD CANNSTATT) SEELBERGSTRASSE 23/25

G 948 Gr-ca 3/4
December 21, 1973

Applicant:

Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH
725 Leonberg near Stuttgart, Siemensstrasse 29-29

“Releasing/Retaining Device for Safety Ski Bindings”

The invention relates to a releasing/retaining device that is designed for safety ski bindings and that comprises means for front or rear retention of the shoe on the ski, optionally also with the interposition of a sole plate or the like, as well as for releasing the shoe both in the upward direction as well as also in the lateral direction against a release resistance in the event of excessively strong releasing forces.

Releasing bindings are known from the prior art, where said releasing bindings release not only in the event of excessively strong upwardly directed forces, but also in the event of excessively strong laterally directed forces. In this case the shoe or more specifically a sole plate is held, for example, by means of a pin, which may be spherical and which engages under spring pressure with a detent recess, which has a V shaped cross section in the vertical and horizontal direction,

Dipl. Eng. GRÄMKOW
7 Stuttgart 50 (Bad Cannstatt) Seelbergstrasse 23/25
Telephone (07 11) 56 72 61

Dr. MANITZ, Dr. DEUFEL, Dipl. Eng. FINSTERWALD
8 Munich 22, Robert-Koch-Strasse 1
Telephone (08 11) 29 36 45; Telex 5-22 050 mbpat

DR. MÜLLER-BORÉ
33 Braunschweig, Am Bürgerpark 8
Telephone (05 31) 738 87

GMÄHLE

509826/0589

under the action of stronger forces, which may arise during a fall, but can be brought out of engagement after having overcome the springy detent resistance. In this case the detent resistances in the vertical and horizontal plane are in a certain fixed relationship.

Moreover, front jaws are known from the prior art, where a retaining or supporting jaw is guided in a laterally moveable manner on a supporting member, which is rigidly mounted on the ski, or which can be pivoted about a perpendicular axis or which is guided accordingly, against a springy resistance in such a way that said retaining or supporting jaw can be swiveled away towards the front after a short lateral lift. However, a front jaw of this type does not permit a release in the upwards direction, for example, in order to release the shoe in the event of a rearward fall.

The object of the present invention is to achieve a reliable retention of the shoe in the normal mode as well as also maximum safety in the event of a fall, in particular, in the event of a forward or rearward fall and also a rotation fall. In particular, the objective is to make it possible to

adjust the retaining suspension for lateral and vertical retention of the shoe to an optimal value in each case. At the same time the goal is to achieve a space saving, compact design.

The invention achieves this engineering object in such a way that a retaining jaw for holding the shoe in the lateral direction is mounted on an upwardly pivotable hold-down member, which holds the shoe against a release resistance in the upwards direction, in such a way that said hold-down member can be swiveled to the side against a detent resistance, which is supported on said hold-down member.

The invention allows the resistance against release in the upward direction, on the one hand, and against release in the lateral direction, on the other hand, to be dimensioned and adjusted independently of each other. At the same time it is possible to achieve a relatively simple compact design.

Preferably the retaining jaw has two side arms, which reach over the shoe sole or the like, for lateral retention of the shoe in a manner that is known from the prior art. In this case said retaining jaw is held in the working position by a central detent suspension, which is supported on the hold-down member.

Preferably the retaining jaw is supported, for example, in the manner of a detent, in the detent recesses under the action of the detent suspension at two lateral points on the upwardly pivotable hold-down member; and said lateral points are positioned in each instance at an equal distance or an approximately equal distance from the central axis of the retaining device. Thus, the retaining jaws can be swiveled away from the shoe and, in so doing, can quickly release said shoe.

Furthermore, in a preferred embodiment of the invention the hold-down member, which serves to hold the shoe in the upward direction and which can be pivoted upwards about a rearward transverse axis, is held down against upwardly pivoting by one or more hold-down springs by means of guide members, for example, sliding or rolling members, which are pressed by the hold-down springs against a detent track, which extends obliquely upwards relative to the spring force, on the hold-down member. In this case the hold-down springs or more specifically their guide members can be arranged on link arms or more specifically can be guided by means of said link arms; and the ends of said link arms that are located opposite the guide members are mounted in an articulated manner on a part that is mounted relatively rigidly on the ski or that is mounted more or less rigidly on the ski (can also be adjusted, if desired).

A particularly space saving, closed design can be achieved, if, furthermore, two hold-down springs, which are arranged parallel side by side below the hold-down member, which has the shape of a housing, are provided for supporting the hold-down suspension. The guide members of said hold-down springs are guided on two detent tracks, which are arranged on both sides of the detent suspension for the retaining jaw that can be released sideways.

Additional details of the invention will become apparent from the following description of an embodiment that is shown merely for illustrative purposes. The drawings show in

Figure 1 a longitudinal view of an inventive releasing/retaining device of a releasing ski binding in a sectional view along line 1-1 from Figure 2; and

Figure 2 a plan view of Figure 1, in a sectional view along line 2-2 from Figure 1,

where in each case the releasing/retaining device is explained as a rearward heel holding device.

A bearing block 11 comprising a rear cross wall 11a (always according to a heel holding device) and side walls 11b is mounted (if desired, adjustable in the longitudinal direction of the ski), for example, by means of screws, rivets or the like on the ski 10. The housing-shaped hold-down

member 13 is mounted in the bearing block 11 in such a way that said hold-down member can be swiveled upwards in the direction of the arrow x about a transverse axis 12. The housing-shaped hold-down member has a front cross wall 14, which is provided with an inwardly directed tubular extension 15, which is open towards the rear and which has a shoulder 16 towards the front. Two hold-down springs 17, which are accommodated laterally inside the housing-shaped hold-down member 13, are braced, on the one hand, against a common yoke-like spring abutment 18, which is arranged so as to be screwable to a set screw 19, which is inserted into an opening of the rear back wall 11a of the bearing block 11, and are braced, on the other hand, against the spring abutments 20, which bear rollers that act, for example, as the guide members 21. Due to the pressure of the hold-down springs 17, these rollers are in engagement with the detent tracks 22, which are provided on the front cross wall 14 of the hold-down member 13 and extend obliquely downwards towards the inside. In order to guide the spring abutments 20 or more specifically the guide members 21, there are two link arms 23. The upper end of said link arms is connected in an articulated manner to the spring abutments 20; and the lower end of said link arms is mounted on the side walls 11b of the bearing block in such a way that said lower end can be pivoted by means of a pivot pin 24.

A retaining jaw 25 has two arms 26, which reach laterally over the shoe sole or the like, and is pressed against the front wall 14 of the hold-down member by a rod-shaped tension member 27 and by a detent spring 28, which is formed as a compression spring, by means of two detent cams 29, which extend in the vertical direction, in that in the central working position of the support device the cams 29 engage with the detent recesses 30, which are spaced equidistant from the vertical central plane of the retaining device or more specifically the housing-shaped hold-down member 13. The retaining jaw 25 has a central opening 31 with a recess 32 that resembles a ball cup. The matching cylindrical or spherical head 33 of the rod-shaped tension member 27, which passes with clearance through the central opening 31, engages with said recess that resembles a ball cup.

The tension member 27 is formed as a threaded rod and carries a spring abutment 34 on its end, opposite the retaining jaw 25, inside the housing-shaped hold-down member 13, or more specifically, inside the tubular extension 15. Said spring abutment can be screwed on the threaded rod 27 in the longitudinal direction by means of a nut 34a, which is connected to said spring abutment by means of a vertical pin 35. As a result, the prestress of the detent spring 28 can be changed. With its opposite end adjacent to the retaining jaw 25, the detent suspension 28 is supported on the shoulder 16 of the front wall 14.

Upon the occurrence of a strong upwards directed force, for example, in the case of a forward fall of the skier, the hold-down member 13 is swiveled upwards together with the heel holder 25 in the direction of the arrow X, so that the hold-down springs 17 are compressed, in that the guide members 21, which can be formed as sliding members or as rolling members, slide on the inclined detent track 22 downwards relative to said detent track. At the same time the guide members 21 are held by the link arms 23 and, in so doing, are swiveled about the lower bearing joint 24 of the link arms in the direction of the arrow Z. The detent lugs or detent cams 22a are provided in the central region of the detent tracks 22. At the same time the detent suspension 28 for the retaining jaw 25 remains unaffected.

If there is excessive lateral force in the direction of arrow Y₁ or Y₂, the heel holder 25 swivels in the corresponding transverse direction. As a result, the detent cams 29 are swiveled in their recesses 30 against the action of the detent suspension 28. The tension member 27 can be set inside the detent suspension 28 so as to tilt about the joint 35, an action that is made possible as a result of the spherical engagement of the head 33 and the recess 31. In this case the heel holder 25 swivels so far towards the rear until the shoe or more specifically the sole plate, which is connected to the shoe, or the like is released by the retaining device. Optionally the arrangement may also be

configured in such a way that the detent cams 29 are pressed out of the recesses 30 and then swiveled sideways, in order to release the shoe.

By rotating the tension member 27 at the head 33 it is possible to change the prestress of the detent suspension 28 for the lateral swivelling out motion, while the adjustment of the prestress of the hold-down springs 17 can be performed by rotating the screw member 19. Hence, the detent suspension and the hold-down suspension can be adjusted separately to a desired optimal retaining or releasing force.

The invention is not restricted to the embodiments that have been shown merely for illustrative purposes. Therefore, in place of the compression spring 28 with a tension member 27 as the detent suspension for the retaining jaw, it is also possible to provide a tension spring, which is connected with its outer end (on the left hand side in the drawing) to the retaining jaws and is connected with its inner end (on the right hand side in the drawing) to the upwardly pivotable hold-down member. The invention can also be applied to a front retaining device, instead of to a rear retaining device.

Claims:

1. Releasing/retaining device that is designed for safety ski bindings and comprises means for front or rear retention of the shoe on the ski, optionally also with the interposition of a sole plate or the like, as well as for releasing the shoe both in the upward direction as well as also in the lateral direction against a release resistance in the event of excessively strong releasing forces, characterized in that a retaining jaw (25) for holding the shoe in the lateral direction is mounted on an upwardly pivotable hold-down member (13), which holds the shoe against a release resistance in the upwards direction, in such a way that said hold-down member can be swiveled laterally against a detent resistance (detent suspension 28), which is supported on said hold-down member.
2. Releasing/retaining device, as claimed in claim 1, characterized in that the retaining jaw (25) has two side arms (26), which reach over the shoe sole or the like, for lateral retention of the shoe in the well-known manner, and is held in the working position by means of a central detent suspension (28), which is supported on the hold-down member (13).

3. Releasing/retaining device, as claimed in claim 2, characterized in that the retaining jaw (25) is supported, for example, in the manner of a detent, under the action of the detent suspension (28) at two lateral points on the upwardly pivotable hold-down member (13) and is swiveled in the recesses (30), which have, for example, the form of a trough, under the action of lateral forces until the shoe or more specifically a sole plate is released and is moved sideways out of these recesses upon overcoming the latching action.
4. Releasing/retaining device, as claimed in claim 2 or 3, characterized in that the detent suspension of the retaining jaw (25) is formed by a compression spring (28), which presses the retaining jaw (25) axially from the outside against the hold-down member (13) by means of a rod-shaped tension member (27), which extends through said compression spring, and is supported in turn with its end, adjacent to the retaining jaw, on the hold-down member.
5. Releasing/retaining device, as claimed in claim 3 or 4, characterized in that in order to adjust the release resistance of the detent suspension (28), an adjustable spring abutment (34) is arranged on a tension member (27).

6. Releasing/retaining device, as claimed in claim 4 or 5, characterized in that the rod-shaped tension member (27) is hinged on the spring abutment (34), which is used to support the detent suspension (28) on the tension member (27), by means of a laterally articulated head (33) on the retaining jaw (25) and/or by means of a vertical joint (35).
7. Releasing/retaining device, as claimed in any one of the claims 1 to 6, characterized in that the hold-down member (13), which can be pivoted upwardly about a rearward transverse axis (12), is held down against upwardly pivoting by one or more hold-down springs (17) by means of guide members (21), for example, sliding or rolling members, which are pressed by the hold-down springs (17) against a detent track (22), which extends obliquely upwards relative to the spring force, on the hold-down member.
8. Releasing/retaining device, as claimed in claim 7, characterized in that the hold-down springs (17) or more specifically their guide members (21) are arranged on link arms (23) or are guided by means of said link arms, which are mounted in an articulated (24) manner on their ends opposite the guide members (21) on a part that is mounted relatively rigidly on the ski or that is mounted more or less rigidly on the ski.

9. Releasing/retaining device, as claimed in claim 7 or 8, characterized in that in order to support the hold-down suspension (28) two hold-down springs (17), which are arranged parallel side by side below the housing-shaped hold-down member (13), are provided; and their guide members (21) are guided on two detent tracks (22), which are arranged on both sides of the detent suspension (28) for the laterally releasable retaining jaw (25).
10. Releasing/retaining device, as claimed in claim 9, characterized in that the hold-down member (13) has on its upwardly pivotable end, facing the shoe, a cross wall (14), which has on its outside the guide surfaces (30, 30a), supporting the retaining jaw (25), optionally with detent recesses (30); on its inside, on the one hand, a supporting surface (shoulder 16), which is used to support the detent suspension (28), which is accommodated, for example, in a tubular extension (15), for the retaining jaw (25), and, on the other hand, the detent cams (22) for the hold-down suspension (17).

Blank Sheet

509826/0589

FIG.1

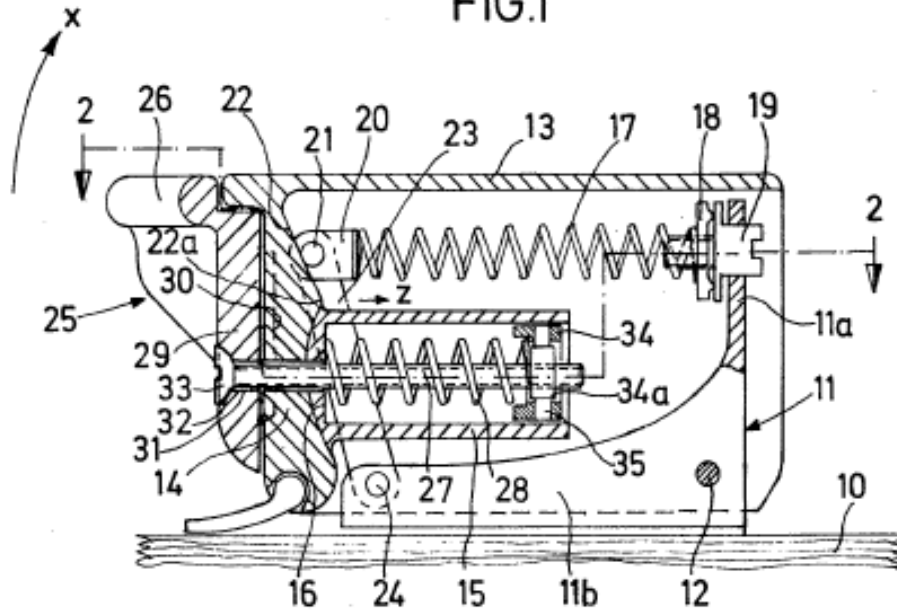
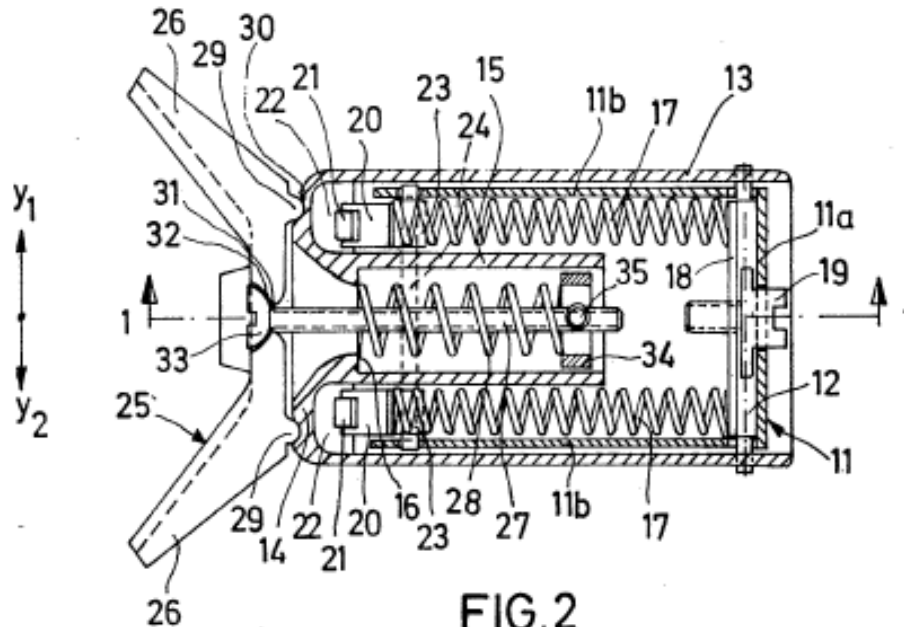


FIG. 2



AFFIDAVIT OF ACCURACY

I, Kriemhild Zerling, hereby declare under penalty of perjury as follows:

1. I am fluent in both English and German, and I have experience translating technical documents between the two languages.
2. I am the translator of the attached English translation of the attached German Patent Publication No. DE 23 64 298, entitled "Releasing/Retaining Device for Safety Ski Bindings," published June 26, 1975.
3. I certify that the attached English translation, to the best of my knowledge and belief, is a true and accurate translation.
4. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Kriemhild Zerling
Kriemhild Zerling, Certified Translator

Location: 1025 Sixth Street NE Washington, DC 20002

Date: 4/7/2017