

Dec. 19, 1967

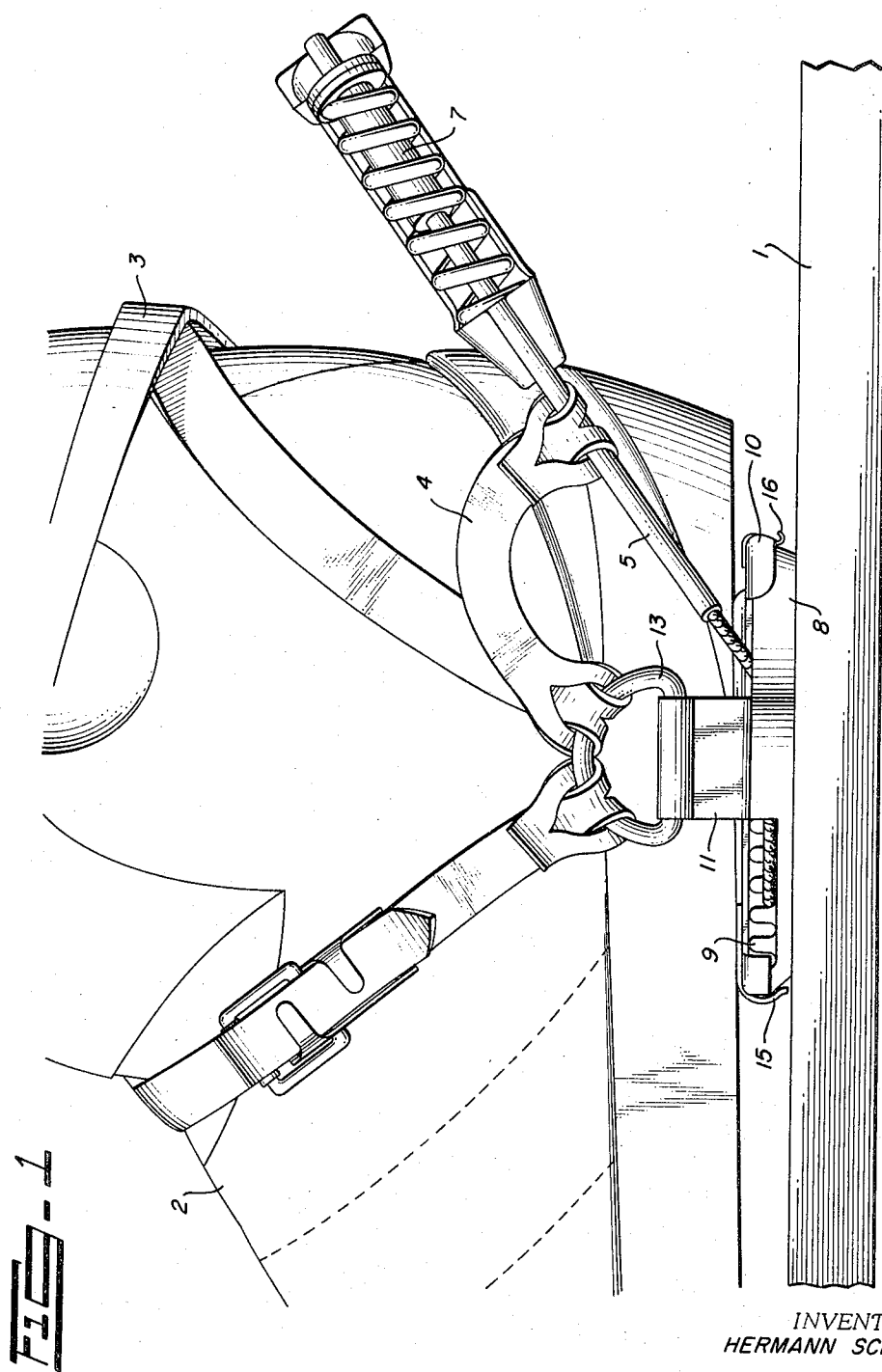
H. SCHEIB

3,359,011

HEEL-CLAMPING DEVICE FOR SAFETY SKI BINDINGS

Filed Sept. 14, 1965

2 Sheets-Sheet 1



INVENTOR.
HERMANN SCHEIB

Dec. 19, 1967

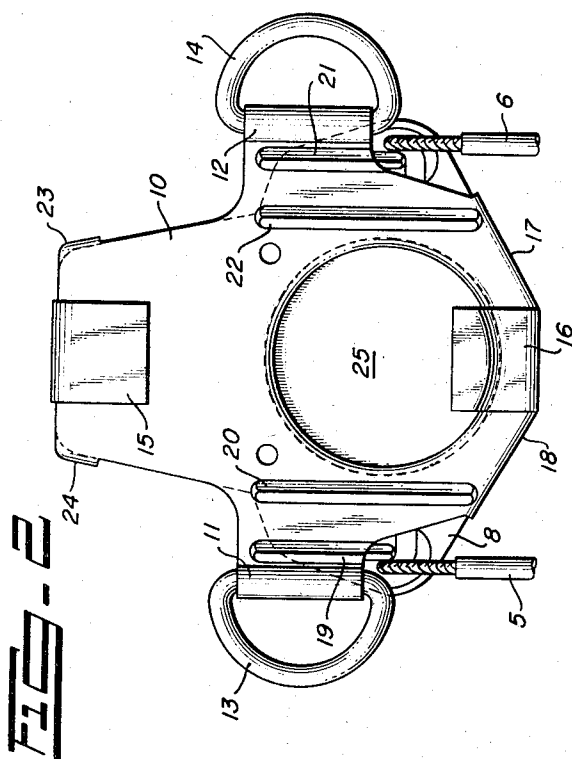
H. SCHEIB

3,359,011

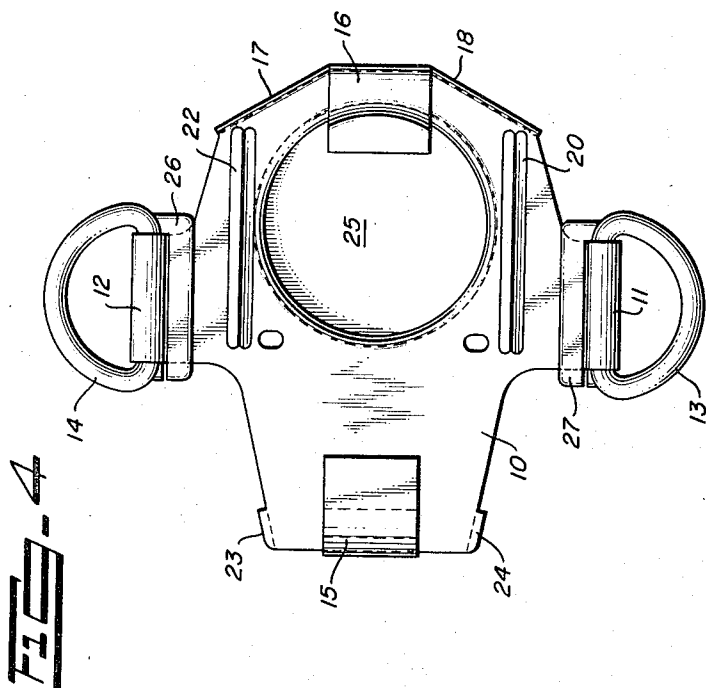
HEEL-CLAMPING DEVICE FOR SAFETY SKI BINDINGS

Filed Sept. 14, 1965

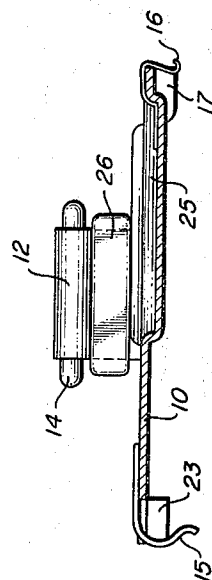
2 Sheets-Sheet 2



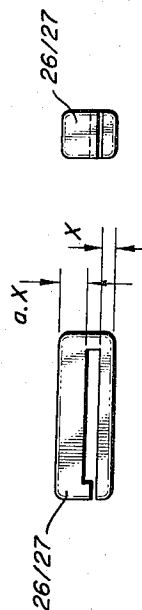
2-11



FD-4



THE



THE 571

INVENTOR.
HERMANN SCHEIB

1

3,359,011

HEEL-CLAMPING DEVICE FOR SAFETY SKI BINDINGS

Hermann Scheib, Garmisch-Partenkirchen, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany

Filed Sept. 14, 1965, Ser. No. 487,186

Claims priority, application Germany, July 5, 1965, M 65,816

4 Claims. (Cl. 280—11.35)

ABSTRACT OF THE DISCLOSURE

Heel clamping device for safety ski bindings, more particularly for the heel portion of a ski boot, which combines the desirable features of a long thong with a releasable binding and pivotal turntable. Structurally, the device consists of a turntable that is fastened to the ski and is detachable from it. The turntable is mounted for rotating motion and carries a safety heel tightener for the purpose of pressing the heel of the boot forwardly against a toe iron. The heel tightener includes a safety feature which permits release when the ski boot or foot experiences an excessive pull. The turntable is provided with a cover plate that clamps to it but is easily detachable from it. The long thong is carried by the cover plate.

For many years longthong bindings for fastening the boot on the ski have been preferred, especially by racers, because with the longthong an exceptionally firm connection between boot and ski can be obtained, giving excellent control of the ski. It has also become known that the most diversified safety precautions have been taken in connection with longthong bindings in order to prevent foot injuries in case of sidewise or forward falls. The arrangement of a turntable on the ski in the vicinity of the heel, with lugs for the longthong, is already well-known. In this case the pull of the heel tightener generates a force in the longitudinal direction of the ski pressing the foot forward against a front abutment, preferably a safety toe iron, by means of a thrust member engaging in the heel groove. However, these well-known heel clamping devices have the disadvantage that, although in sidewise falls the foot can turn in relation to the ski, in forward falls a release is not possible because the foot is held by the longthong to the turntable which although rotatable is not detachable from the ski. Even in solely sidewise falls there is danger of injury because the foot, although it can swivel, is still tied to the ski.

Efforts have been made to overcome these disadvantages by arranging for the disengagement of some matching parts between the firmly mounted base plate for the turntable and the turntable itself after the turntable has been rotated by a certain angle, whereupon it can be completely detached from the base plate. The disengagement of the boot from the ski is thus achieved in case of a sidewise fall but the danger existing in a forward fall is not eliminated.

It has also been attempted to develop a kind of fastener for the heel tightener and the longthong that will enable the fastener to slip out of their holders and thus release the boot. These proposed schemes, however, could not be materialized because their construction is too complicated and, in case of danger, the release action is not positively ensured.

In other well-known heel-clamping devices with longthongs the turntable is detachably fastened to the base plate or to the pivot and will be released by detent devices when the detent pressure is overcome. In case of an

2

excessive pull the detent resistance of the detent devices is overcome and the turntable separates from the ski. These experiments were also unsuccessful because the installation of detent devices requires much height and because in many cases, if the foot is twisted during a forward fall, the release mechanism cannot function. Besides, there is some danger in these and also in some other heel-clamping devices in which the longthong itself is fastened to the turntable with detent devices, namely that as a result of a continued though not excessive pull such as may occur when the skier is heavily leaning forward combined with simultaneous minor jolts, such as are frequently experienced when passing through troughs or sliding down over icy runways, a release is effected because the elements of the detent device do not return to their original position on account of the continuous pull and will be further shifted with each successive jolt until finally a release takes place without the incidence of an excessive pull such as that for which the detent devices have been set.

In general, therefore, the use of the longthong on the current heel-clamping devices with safety release for forward falls had to be given up and only the turntable, which is effective in sidewise falls, has been combined with a heel safety tightener that releases the foot in forward falls. So the firm connection obtained between boot and ski by a longthong binding had to be abandoned for the sake of safety against all possible kinds of falls.

The present invention solves the problem of creating a longthong binding which in spite of the desired firm connection between boot and ski can release the foot in sidewise as well as forward falls by having a turntable, pivoted in the vicinity of the heel but undetachably mounted on the ski, which is equipped with a well-known safety heel tightener of any chosen construction, said heel tightener pressing the foot forward against a front abutment of the binding by means of a thrust member engaging in the heel groove but releasing it under the effect of an excessive pull in a direction approximately vertical to the ski surface, and a cover plate clamped to the turntable but readily detachable and equipped with lugs for the attachment of a longthong. Thus the release of the foot in case of a forward fall does not depend on the longthong and its attachment to the turntable but on the safety heel tightener. In case of a forward fall disconnection of the turntable is not necessary. But the advantages of the longthong binding are obtained, nevertheless, and the cover plate carrying the longthong and attached to the turntable can separate from the ski when the foot is released by the safety heel tightener. The functioning of the safety heel tightener can be affected neither by a twisting of the boot in relation to the ski nor by several successive single jolts of minor intensity because the known safety heel tighteners are always releasing the foot only after a certain adjustable and predetermined total pull has been exceeded or after the heel has been lifted a certain amount from the ski surface.

In another advantageous embodiment of this invention one end of the longthong which is fastened at a point in front of this end to the corresponding lug of the cover plate may serve as a retaining thong and be connected with one of the thrust members of the safety heel tightener. The cover plate may preferably have some sharp-edged ribs running, in their normal position, in the longitudinal direction of the ski, penetrating in the well-known manner the rubber material of the ski boot heel and causing the cover plate and with it the turntable to follow instantly every rotary motion of the boot without any danger of the heel slipping out of the cover plate. On the other hand, the ribs, by their normal longitudinal direction are

not resisting the forward thrusting force of the heel tightener.

For adaptation to various heel widths the bent-up shackles for the thong lugs can be adjustably attached to the base plate or else a variety of different cover plates may be used for different heel widths. For adaptation to the heel width it is particularly advantageous to provide spacer blocks or strips, preferably made of a plastic, with slots for slipping them over the shackles for the longthong lugs and with unequal wall thicknesses on each side of the slot so that, by selection of the heavier or the lighter wall thickness of the spacer, adaptation to six different heel widths can be accomplished. Such slotted spacers with unequal wall thicknesses can also be used independently from the other features of the invention on heel-clamping devices with shackles for the thong lugs in order to obviate the rather expensive adjustability of the shackle distance.

The invention is further explained in the following description in conjunction with the accompanying drawings, in which:

FIG. 1 is a side view of a heel clamping device according to this invention, in the clamping position and with the boot strapped on;

FIG. 2 shows the turntable of the heel clamping device according to FIG. 1 with cover plate but without boot and heel tightener;

FIG. 3 is a side view, in sectional elevation, of the detachable cover plate;

FIG. 4 is a top plan view of the cover plate;

FIGS. 5 and 6 are a top plan view and a side view respectively of a spacer.

FIGURE 1 shows the heel-clamping device according to this invention, on the boot in the clamping position, while the FIGURES 2 to 6 are showing the details. The turntable 8 is rotatably attached to the ski 1 in a well-known and therefore not-further-to-be-explained manner by means of a base plate which is arranged overlappingly in an opening of the turntable 8 and is firmly screwed on to the ski. In an also well-known manner this turntable is equipped with grooves or ribs 9, arranged consecutively in the longitudinal direction of the ski, onto which the pulling elements 5 and 6, made of wire cable, can be hooked, thus giving lengthwise adjustability by the selection of suitable grooves or ribs 9. Fastened to the pulling elements 5 and 6 is an also well-known safety heel tightener 7 whose construction is not to be described here since a great variety of designs can be used. According to the invention the turntable 8 is covered by a cover plate 10 which can be detached from the turntable and is in clamping contact with the turntable only through the leaf springs 15 and 16. For the purpose of securing the position of the cover plate in relation to the turntable there are the bent-up ears 17 and 18, 23 and 24 of the cover plate and also a recess 25 that fits into a recess of the base plate (not shown on the drawing). On both sides of the cover plate angular shackles are provided with rings 13 and 14 for fastening the longthong 3. In the well-known manner the longthong 3 can be wrapped around the boot 2 with its end 4 beyond the fastening point of the longthong 3 on ring 13 serving as a retaining thong and thus being tied to the pull-cable 5. It is essential that the longthong 3, as the drawing shows, is tied up on the holding ring 13 and not merely drawn through it so that the pull exerted by the longthong does not extend to the pull-cable 5 through the retaining thong 4.

The cover plate 10 has ribs 19 to 22 contributing like the recess 25 to the stiffening of the cover plate 10, but even more so for the purpose of securing a rigid torsional connection between the cover plate with the turntable and the ski boot heel, which is usually made of rubber. As shown on FIG. 2 the cover plate 10 also has notches for bringing out the pull-cables 5 and 6 in a satisfactory manner.

Under excessive pull, as is apt to occur in a forward fall, the foot is released by the heel tightener 7 in which case the heel tightener, together with its pull cables, remains connected to the turntable 8 and the latter likewise to the ski through its base plate. Due to the easily-detachable clamping connection made by the leaf springs 15 and 16 the cover plate 10 is lifted from the turntable 8 so that the boot, together with the longthong and the cover plate, will be disengaged from the ski and will retain only a loose connection with the heel clamping device through the retaining thong 4 in order to prevent loss of the ski.

In order to make the heel-clamping device usable for boots with heels of different widths, either the spacing between the shackles 11 and 12 on the cover plate can be made adjustable or cover plates with different clearances between the shackles 11 and 12 can be provided, so that the cover plate 10 can be exchanged to suit the width of the heel. However, the first possibility is relatively complicated and therefore expensive, while the second one requires an undue amount of storekeeping. It is therefore quite advantageous to slip spacer blocks 26 and 27 on the angular shackles 11 and 12 according to the individual requirements. The spacer blocks are to have slots for attachment and can preferably be made of plastics with different wall thicknesses on each side of the slot so that by omission of the spacer blocks, by the use of only one block and by variation of the wall thickness on the inside of the lugs adjustment for six different widths of the ski boot is possible.

What is claimed is:

1. A heel-clamping device for safety ski bindings, comprising in combination:

- (a) a rotatable but undetachable turntable fastened on the ski in the vicinity of the heel,
- (b) a safety heel tightener fastened on the turntable, said heel tightener pressing the foot forward against a front abutment of the binding by means of a thrust element engaging in the heel groove but releasing the foot under an excessive pull in a direction approximately vertical to the ski surface
- (c) a cover plate, clamped to but easily detachable from the turntable, and
- (d) a longthong fastened to the cover plate.

2. A heel-clamping device according to claim 1, having one end of the longthong that is fastened on the corresponding thong lug at a spot in front of this end connected with one of the pull cables of the heel safety tightener.

3. A heel-clamping device according to claim 1, having a cover plate with sharp-edged ribs running in their normal position in the longitudinal direction of the ski.

4. A heel-clamping device for safety ski bindings with bent-up shackles for thong rings, said shackles being attached to a heel plate, particularly according to claim 1, having spacer blocks or strips preferably made of plastics, for adaptation to the heel width, with slots for slipping over the metal strap of the shackles for the thong rings and having wall thicknesses on each side that are different from one another.

References Cited

UNITED STATES PATENTS

2,836,428	5/1958	Marker	280—11.35
3,009,710	11/1961	Marker	280—11.35
3,160,421	12/1964	Bugg	280—11.35
3,204,973	9/1965	Voster et al.	280—11.35
3,206,221	9/1965	Schneider	280—11.35

FOREIGN PATENTS

1,355,083	2/1964	France.
-----------	--------	---------

BENJAMIN HERSH, *Primary Examiner*.

M. L. SMITH, *Assistant Examiner*.