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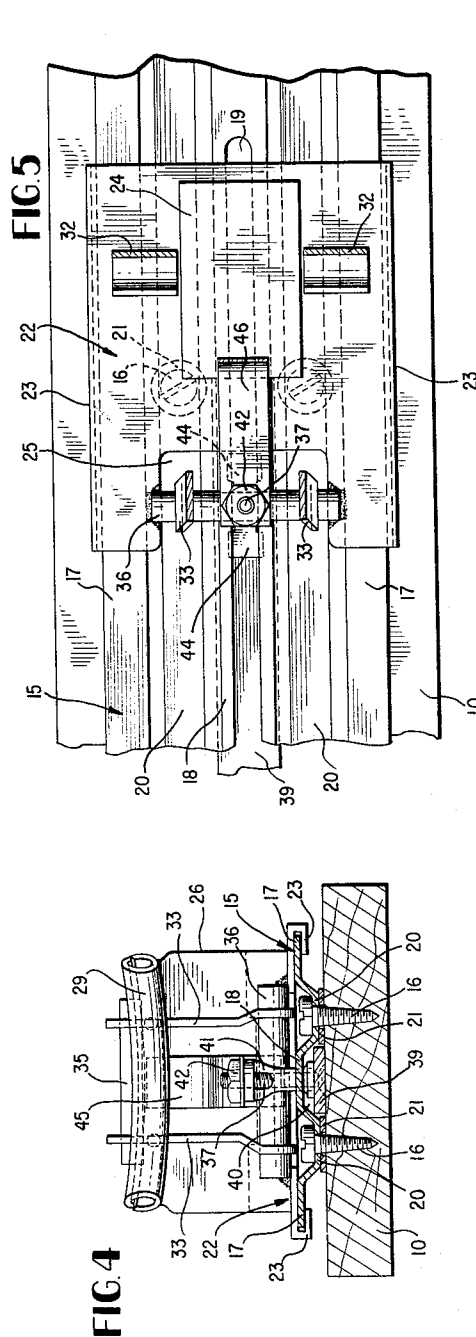
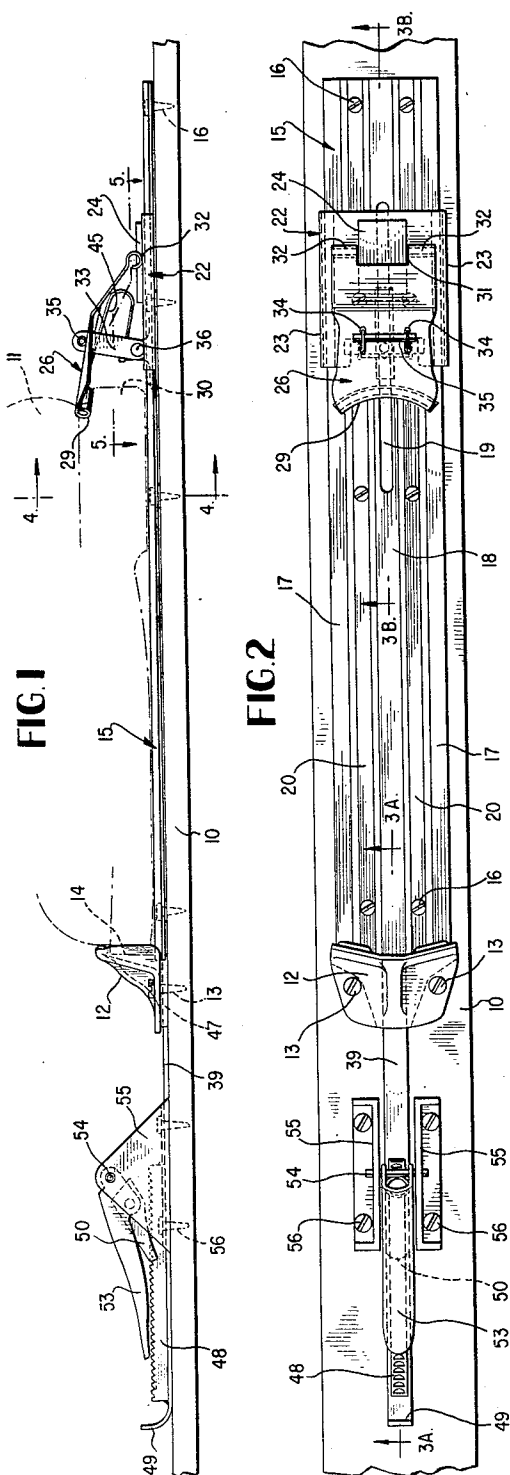
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SKI BINDING

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2 Sheets-Sheet 1



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SKI BINDING

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9 Claims. (Cl. 280—11.35)

This invention relates to a ski binding.

A main object of the invention is to provide an improved ski binding which may be quickly and simply adjusted to any length or size of ski boot or any heel height, which height varies with different sizes and makes of ski boots.

Another object is to provide a ski binding including adjusting means positioned near the front of the ski boot where it is very convenient for the skier to reach the same.

Another object of the invention is to provide a ski binding which is rugged and durable in construction and which, when locked in the proper adjusted position, exerts a very firm holding force upon the ski boot.

Still another object is to provide a ski binding which may be adjusted readily to any size ski boot even by beginners in the sport of skiing.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

FIGURE 1 is a side elevation of a ski binding according to the invention,

FIGURE 2 is a plan view of the same,

FIGURE 3a is an enlarged fragmentary longitudinal vertical section taken on line 3a—3a of FIGURE 2,

FIGURE 3b is a similar section taken on line 3b—3b of FIGURE 2,

FIGURE 4 is an enlarged transverse vertical section taken on line 4—4 of FIGURE 1, and

FIGURE 5 is an enlarged fragmentary horizontal section taken on line 5—5 of FIGURE 1.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of the invention, attention is directed first to FIGURES 1 and 2 showing the ski binding in its entirety. In these figures, the numeral 10 designates a ski of any preferred type and the numeral 11 designates a ski boot to be detachably secured to the ski by means of the invention ski binding. A toe piece 12 of any preferred type is rigidly secured by screws 13 or the like to the ski 10 in a proper location to engage the forward extremity 14 of the ski boot sole, as shown in the drawings. The toe piece per se forms no part of the present invention except that some toe piece must be utilized in conjunction with the heel gripping mechanism of the ski binding in order to properly bind the ski boot 11 to the ski.

The invention proper embodies a relatively stationary elongated base plate 15, extending rearwardly of the toe piece 12 and along the top of the ski for a considerable distance and rigidly secured directly thereto by a suitable number of pairs of screws 16. The base plate 15 has the cross sectional shape depicted in FIGURE 4 and includes side longitudinal flanges 17 which are elevated somewhat from the top face of the ski 10, a central elevated portion 18 having a longitudinal slot 19 in its rear portion, FIGURE 2, and intermediate depressed or channel-like portions 20 which may rest on flat washers 21.

A slide plate or carriage 22, substantially shorter than the base plate 15, is slidably mounted upon the latter in the region of the slot 19 and includes longitudinal side channel-forming extensions 23 which receive the longitudinal flanges 17 of the base plate slidably. The slide

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plate 22 has a raised rectangular portion or pad 24 integral therewith for a purpose to be described. The slide plate 22 has a clearance notch 25 formed in its leading end.

A sturdy heel plate 26 is provided including inclined and generally level portions 27 and 28, the latter portion carrying a forward arcuate bead 29 integral therewith, adapted to engage and grip the heel 30 of ski boot 11. The heel plate 26 is not directly connected to the slide plate 22 and has a floating relation relative thereto but is restrained at all times by linkage means to be described. The lower trailing end of the heel plate 26 is bifurcated at 31, FIGURE 2, and is provided with beads or knuckles 32 which straddle the raised pad 24 and slidably engage the top face of the slide plate 22 on opposite sides thereof. The pad 24 therefore guides and stabilizes the trailing end of the heel plate 26 and prevents appreciable lateral shifting of the heel plate.

The heel plate 26 is at all times under the restraining influence of a pair of upstanding links 33 which extend movably through slots 34 in the heel plate, FIGURE 2, and are interconnected near their tops by a transverse roll pin 35 which bears slidably upon the portion 28 of heel plate 26.

The lower ends of links 33 are pivotally mounted upon the end portions of a transverse pin 36 which spans the forward portion of slide plate 22 adjacent the top face thereof and adjacent the notch 25. This pin 36 has a vertical opening formed therethrough at its longitudinal center, receiving an upstanding bolt 37, said bolt also engaging through a spacer element 38 arranged below the pin 36 and resting upon and underlying elongated pull bar 39. The bolt 37 secures the rear portion of pull bar 39 rigidly to the spacer 38 and transverse pin 36. The pull bar 39, FIGURE 4, extends longitudinally through the tunnel or passage 40 formed by the elevated section 18 of base plate 15. The pull bar 39 extends from the region of the slide plate 22 and associated elements forwardly beyond the base plate 15 and forwardly of the toe piece 12 for an important purpose to be described.

An inverted generally U-shaped loop or strap 41 engages over the transverse pin 36 snugly and has a top opening receiving the bolt 37, the latter being capped by a nut 42 and a flat washer 43, FIGURE 3b. The bottom feet 44 of strap 41 are welded to the top face of pull bar 39 to form a rigid connection between the same and the pin 36 and associated elements to which the links 33 are pivoted. Thus, the bottoms of the links 33 may move longitudinally forwardly or rearwardly with the pull bar 39 and the links may pivot upon the pin 36 during this movement. The roll pin 35 may roll upon the heel plate 26 and through this roll pin, the links draw the heel plate 26 downwardly toward clamping engagement with the heel of the ski boot, the rear beads 32 being rockable upon the slide plate 22.

An expansible leaf spring 45 has its lower arm 46 secured to the bolt 37 between the nut 42 and washer 43 and the upper arm of this spring engages beneath the heel plate 26 and constantly holds the same upwardly in engagement with the roll pin 35 so that there will not be any play in the linkage.

The opposite extremities of cross pin 36 are welded or otherwise rigidly secured directly to slide plate 22 so that the latter will move longitudinally forwardly and rearwardly upon the base plate 15 together with the pull bar 39 and associated elements. The heel plate 26 has a sliding or floating relation to the slide plate 22 as stated and is only indirectly connected therewith by the links 33 and associated elements.

The pull bar 39 projects longitudinally forwardly of the toe piece 12, as previously stated, and extends movably through a passage 47 under the toe piece in align-

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ment with the tunnel or passage 40 of base plate 15. At its forward end, the pull bar has a toothed rack segment 48 welded or otherwise rigidly secured thereto, and the forward extremity of the pull bar is upturned at 49 to provide a finger hold.

A feed pawl or dog 50 for the toothed rack segment is pivoted at 51 to an extension 52 of a hand operated lever 53, in turn pivoted at 54 upon and between a pair of upstanding brackets 55, rigidly secured by screws 56 or the like to the ski 10 on opposite sides of pull bar 39 and associated elements.

As should be obvious, raising and lowering of the lever 53 upon its pivot 54, FIGURE 3a, will cause the pawl 50 to advance the rack segment 48 and pull bar 39 forwardly in a step-by-step manner through the coaction of the pawl with the rack teeth, which are slanted for forward feeding. The pawl 50 readily slides over the teeth of the rack segment during reverse movement of the pawl as shown in broken lines in FIGURE 3a.

In use or operation, the ski boot 11 is positioned upon the ski and base plate 15 with the toe thereof properly engaging the fixed toe piece 12 as shown in FIGURES 1 and 3a. At this time, slide plate 22 and pull bar 39 and all associated parts may be retracted or positioned somewhat rearwardly of the heel 30. With the ski boot initially placed in position engaging the toe piece 12, the hand lever 53 is oscillated to feed the pull bar 39 forwardly with a jacking action and the slide plate 22 and pin 36 and the lower ends of links 33 move forwardly with the pull bar and the arcuate bead 29 of heel plate 26 is drawn by the links 33 into engagement with the heel 30 of the boot by the camming action of roll pin 35 on the top of the heel plate, the latter being adapted to rock and slide relative to the slide plate 22 on the knuckles 32. Still further advancement of the pull bar 39 by the lever means 53 draws the lower ends of links 33 forwardly, as shown in an exaggerated degree by dotted lines in FIGURE 3b. This final movement of the links draws the heel plate 26 downwardly and forwardly relative to the ski boot and effects a very firm clamping action between the bead 29 and heel 30. When the clamping action is sufficiently tight, the lever 53 is placed in the lowered position, FIGURE 3a, and this locks the pawl 50 in holding engagement with the rack segment 48 so that the pull bar 39 cannot shift rearwardly until the lever 53 is elevated.

To release the ski binding quickly, it is merely necessary to elevate the lever 53 sufficiently to completely disengage the pawl 50 from the rack segment and the user may then grasp the extension 49 and shift the entire pull bar assembly rearwardly relative to the ski boot for the desired distance.

The operation of the ski binding should be apparent to anyone skilled in the art without the necessity for any further description, in light of the drawings and the foregoing description. The arrangement enables the skier to manipulate the ski binding from a position forwardly of the boot by means of the lever 53 and the operating parts are in full view and in convenient position for grasping.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of the invention or scope of the subjoined claims.

Having thus described my invention, I claim:

1. A ski binding comprising a base plate adapted for attachment to a ski intermediate the ends thereof, a fixed toe piece on the ski near the forward end of the base plate, a slide plate movably engaging the base plate rearwardly of said toe piece, a pull bar connected with said slide plate and extending longitudinally of the base plate and forwardly of the base plate and toe piece and movable lengthwise relative thereto with said slide plate, a heel

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clamping plate above said slide plate and having sliding and rocking contact therewith, linkage means pivotally connected with said pull bar and bearing upon the top of said heel clamping plate and operable to draw the latter into clamping engagement with the heel of a ski boot when the pull bar and slide plate are shifted forwardly relative to said base plate and toe piece, and manually operable means on the ski forwardly of said toe piece and adjacent a forward portion of the pull bar and engageable therewith to feed the pull bar forwardly and to releasably lock the same in a selected adjusted position.

2. A ski binding comprising a channeled base plate adapted for attachment to a ski and having raised longitudinal edge portions and a raised central portion forming a longitudinal passage beneath said base plate from end-to-end thereof, a fixed toe piece on the ski near the forward end of said base plate, a heel clamping device longitudinally slidably mounted upon the base plate and including parts movably embracing said raised edge portions, a pull bar connected with said device and extending longitudinally movably through said passage and forwardly of said base plate, and manually operable means attachable to the ski in advance of said base plate and engageable with a forward portion of the pull bar to shift the same forwardly with said heel clamping device relative to the base plate and to releasably lock the bar in selected adjusted positions.

3. The invention as defined by claim 2 and wherein said heel clamping device comprises a slide plate on said base plate and having said parts embracing said raised edge portions, a cross pin interconnecting said pull bar and slide plate, spaced upstanding links pivoted to said cross pin, a heel plate having slots receiving said links and including a trailing portion rockably and slidably engaging said slide plate, a roll pin interconnecting the tops of said links and bearing upon said heel plate, and a spring connected with said heel plate and urging it upwardly into engagement with said roll pin.

4. The invention as defined by claim 3, and a raised pad on said slide plate, and spaced curved knuckles on the trailing end of said heel plate rockably and slidably engaging the top of the slide plate and straddling said pad and restrained thereby from appreciable lateral movement.

5. The invention as defined by claim 4, and an arcuate heel engaging knuckle on the leading end of said heel plate.

6. The invention as defined by claim 2, and wherein said raised central portion of said base plate has a longitudinal slot, and interconnecting means between said device and pull bar and extending movably through said slot.

7. The invention as defined by claim 6, and wherein said interconnecting means comprises a cross pin above said slot transversely thereof, an upright bolt interconnecting the cross pin and pull bar and extending through said slot, and a strap overlying said cross pin and extending through said slot and having feet secured to the pull bar.

8. A ski comprising a ski body portion, a fixed toe piece on said ski, a ski binding base plate secured to said ski and extending rearwardly of said toe piece, there being a longitudinal through passage between said base plate and ski body portion and said base plate having a longitudinal slot communicating with said through passage, a slide engaged with the base plate and shiftable longitudinally thereon, a pull bar extending movably and longitudinally within said passage and forwardly of said toe piece, means interconnecting the pull bar and slide and extending through said slot, a heel clamping plate above said slide and bearing upon the same and free from direct attachment thereto and rockable and slidable thereon, link means cammingly engaging the top of said heel plate and pivoted to said slide and shiftable longitudinally with the slide and pull bar to draw the heel plate into positive clamping engagement with a heel, and manually operable gear means on the ski body portion forwardly of said toe

piece including a part secured to the pull bar and adapted to shift the pull bar forwardly with said slide and to releasably lock the same in a forwardly adjusted position.

9. The invention as defined by claim 8, and wherein said gear means comprises a toothed rack bar rigid with the forward portion of said pull bar, fixed bracket means on said ski near said rack bar, a manual lever pivoted to the bracket means and being vertically swingable, and a pawl pivoted to said lever and engageable with the teeth of the rack bar to advance the same step-by-step longitudinally.

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