

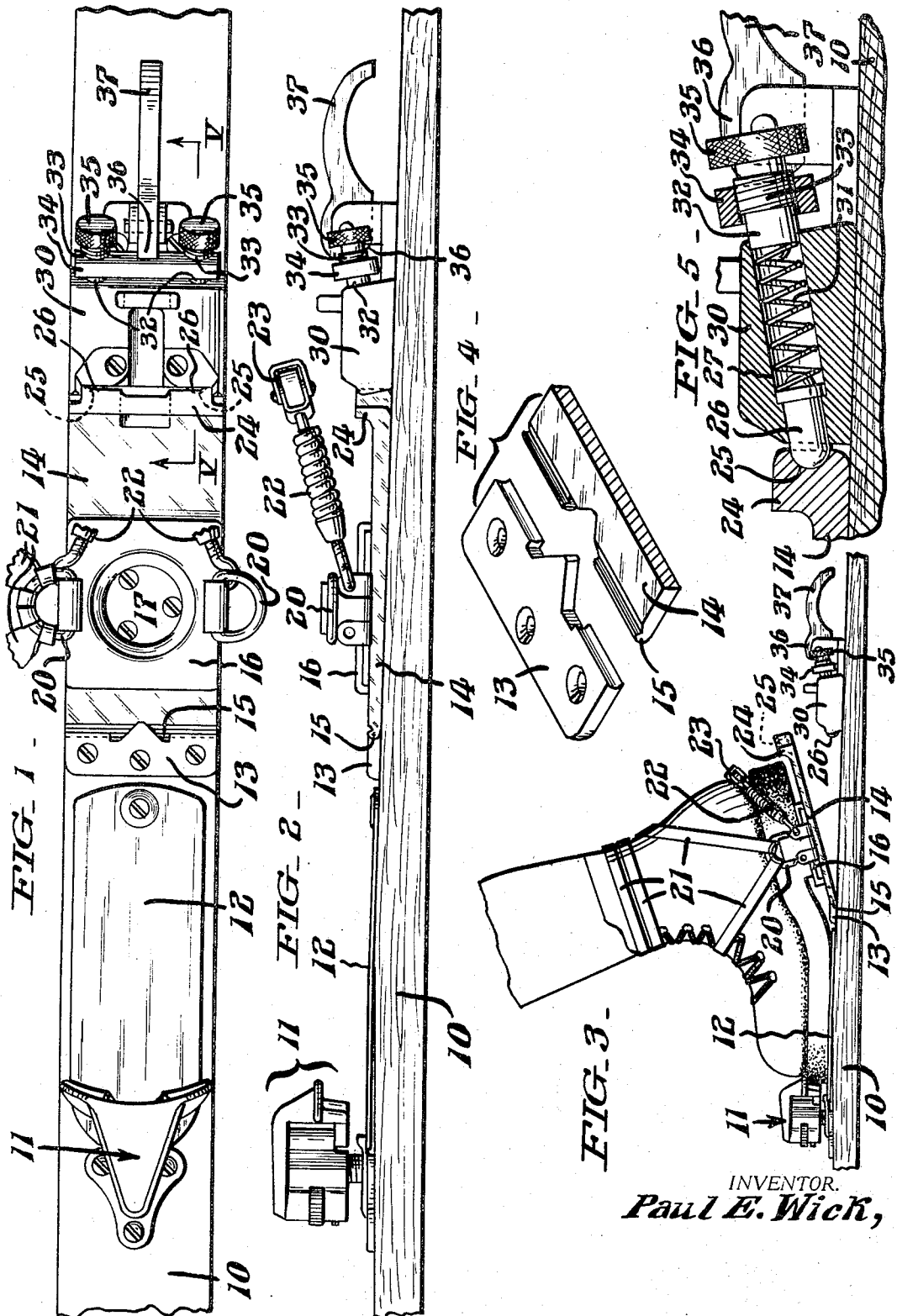
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RELEASE BINDING STRUCTURE

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This invention relates to a novel safety binding for skis, and concerns particularly a binding which combines the features of excellent ski control while skiing and dependable release in the event of a forward fall.

It is now well known that skiing injuries are drastically reduced by the provision of suitable release bindings which release the toe and heel of the skier in the event of side-wise or forward falls. While these bindings are safer than the so-called "long thong" straps sometimes used by racing skiers, which straps secure the skier's boot tightly to the ski and therefore provide excellent ski control, the safety bindings heretofore known have necessarily allowed some freedom of movement of the skier's boot with respect to the ski, thus seriously interfering with the instantaneous ski response that is needed in checking, turning, edging and in other maneuvers frequently used by the skier.

It is an object of this invention to provide a safety binding which not only provides the advantages of the long thongs but also the advantage of safety in the event of a forward fall. Other objects and advantages of this invention will further become apparent hereinafter, and in the drawings of which:

FIG. 1 is a plan view of one specific form of safety binding embodying features of this invention;

FIG. 2 is a view in side elevation of the structure shown in FIG. 1;

FIG. 3 is a view similar to FIG. 2, slightly reduced in size, and showing the manner in which the binding releases in the event of a forward fall;

FIG. 4 is an enlarged view in perspective showing a hinged portion of the binding in accordance with this invention, and

FIG. 5 is an enlarged view partly in side elevation and partly in section, taken as indicated by the lines and arrows V—V which appear in FIG. 1.

The description which follows will be directed to the specific structure selected for illustration in the drawings, and is not intended to limit the spirit or scope of the invention which is defined in the appended claims.

Turning now to FIG. 1, the number 10 designates a ski having a conventional toe safety binding 11 and a conventional swivel plate 12 for the forward part of the skier's boot. Extending transversely across the ski, rearwardly of the swivel plate 12, is a fixed anchor member 13, which is secured to the ski 10 as by means of screws. A base plate 14, free of any fixed connection to the ski, and having a curved bearing portion 15 at its forward end, is arranged in bearing relationship with the anchor member 13. As appears in FIGS. 2, 3 and 4, the rearwardly facing curved surface on anchoring member 13 has an arc of less than half a circle and thus forms an open bearing. The curved bearing portion 15 of base plate 14 is free to turn about the center of curvature of the curved surface on the anchoring member and is also free to move into and out of contact with the anchoring member since it is not captured by the concave curvature of the bearing surface on anchoring member 13. Base plate 14 is beveled slightly upwardly toward the rear, raising the heel of the skier's boot slightly with respect to the forward portion of the boot. A heel turntable 16 having a stationary circular central member 17, which is secured as by means of screws to the base plate 14 but not to the ski 10, carries at its sides a pair of rings 20. To the rings 20 are attached long thong straps 21 which are arranged to be strapped to the

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skier's boot in a manner such as that shown in FIG. 3. Also carried by the turntable 16, and extending around from one side to the other, is a spring clamp 22 which surrounds the heel portion of the skier's boot in the manner of FIG. 3, and which is operable by means of a conventional quick throw toggle lever 23 either to engage the skier's boot under tension, or to be manually released therefrom.

At the rear of the base plate 14 is an upstanding heel portion 24 provided with indentations 25 which appear most clearly in FIG. 5 and can also be seen in FIG. 1, each constructed to cooperate with a mating retaining member 26 reciprocable within a bore 27 formed in a retainer block 30 which is secured to the ski at a predetermined distance with respect to the hinge member 13. Each retainer member 26 is urged by means of a spring 31 toward the heel portion 24 of base plate 14. Each spring 31 is urged by a plunger 32 having a threaded portion 33 threadedly engaged within a transverse member 34. Knobs 35 are provided for adjusting the plunger 32 inwardly and outwardly with respect to the bore 27, thus adjusting the amount of tension on the spring 31. Mounted in fixed position with respect to the block 30 is a turnable cam 36 having a handle 37, the cam portion of which bears against the rearward surface of the cross member 34. The cam is so constructed, as shown in the drawings, that when the handle 37 is in its down position as shown in FIG. 2, the cam surface presses against the cross piece 34, pushing it forwardly, and applying spring pressure to the retainer members 26. Handle 37 can, as is apparent, be flipped upwardly, thus releasing cam pressure and removing all or a substantial part of the spring pressure from the retainer member 26. This is to facilitate insertion of the base plate 14 into and from the other parts of the binding when the skis are not actually in use.

In operation, the skier fits his boot into the binding in just the same way he does with any other long thong binding, by simply fitting the toe of his boot under the toe piece 11, placing his heel on turntable 16, tightening the spring clamp 22 by means of the toggle lever 23, and wrapping the long thong strap 21 around his boot and securing it with a conventional buckle. In skiing, in the event that a forward fall should occur, the skier's body is thrown forwardly and the heel tends to lift. As shown in FIG. 3, the heel portion 24 of base plate 14 swings upwardly, operating about the bearing formed between the anchoring member 13 and the corresponding forward bearing portion of the base plate 14. This release is dependably achieved by the controllably adjusted spring tension of the spring 31 on the retainer member 26, which has a curved forward portion that is yieldably slideable out of the recess 25 located in the heel portion 24 of base plate 14.

In the event that any twisting movement should be exerted upon the skier's boot, which usually does occur in a forward fall, the skier's boot is turnable on the turntable 16, thus facilitating release of the toe from the toe binding 11, which is also of the side-releasing type. Thus, a combined forward lifting freedom and a sideward turning freedom cooperate to assure the safe release of the boot from the ski. Because the rearwardly facing curved surface on the anchoring member 13 has an arc of less than half a circle, the base plate 14 can separate completely from it to the positions illustrated in FIG. 4, providing an important and extra margin of safety for the skier. Yet, when the skier has recovered from the fall, he can re-insert his boot into the binding by simply releasing the toggle lever 23, lifting the lever 37, re-joining the forward portion of the base plate 14 with the hinge member 13, placing the toe of his boot into the toe binding 11, pressing the heel downwardly thereby snapping the heel portion 24 into communication with the retaining

members 26, then closing toggle lever 23 and swinging handle 37 downwardly, thus re-establishing the predetermined spring tension on the springs 31.

Although this invention has been described with reference to one specific form thereof, it will be appreciated that various modifications may be made without departing from the spirit or scope of the invention. For example, equivalent elements may be used for those specifically shown and described, parts may be reversed, and certain features may be used independently of the use of other features, all within the spirit and scope of the invention as defined in the appended claims.

The following is claimed:

1. In a releasable ski binding for a boot which may be fitted with long thongs for strapping down the heel of said boot to provide improved ski control, but which is nevertheless releasable in the event of a fall forwardly with respect to the ski, the combination which comprises a forward anchoring member secured to and extending transversely of the ski and having a rearwardly facing surface which consists entirely of a curved bearing surface thereon, said curve having an arc of less than half a circle and thus forming an open bearing, a base plate arranged on said ski rearwardly of said anchoring member, said base plate having at its forward end a forwardly facing surface consisting entirely of a mating curved bearing surface having a swingable relationship with said anchoring member but being separable from the curved surface of said anchoring member, whereby the rear portion of said base plate is free to swing upwardly and forwardly relative to said ski by frictional movement between said curved surfaces with substantially pure revolving movement about the center of curvature of the curved surface of said anchoring member and to separate completely therefrom, said curved

surfaces mating about a center of rotation which is spaced above the upper surface of the ski by a distance equal to approximately half the thickness of said forward anchoring member, and releasable retaining means operative and effective upon said base plate at a position located rearwardly of said bearing member, said retaining means including a yieldable member which is yieldable in response to the forces generated in a forward fall to release said retaining means.

2. The combination defined in claim 1, wherein said releasable retaining means includes a pair of spring-urged retaining members, wherein means are provided for adjusting their spring pressure, wherein said spring-urged retaining members and said adjusting means are carried upon a transversely-extending support member, and wherein a quick-release cam is mounted on the ski and effective against said support member in a manner quickly to move said support bodily forwardly and rearwardly to engage and disengage both said retaining members concurrently with and from said base plate.

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