

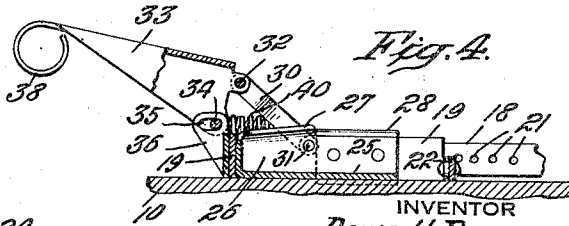
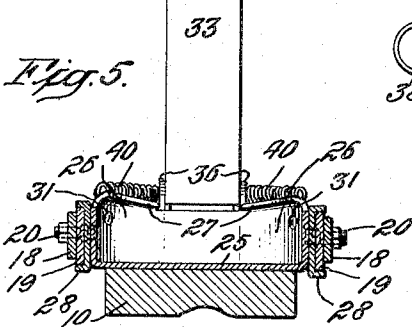
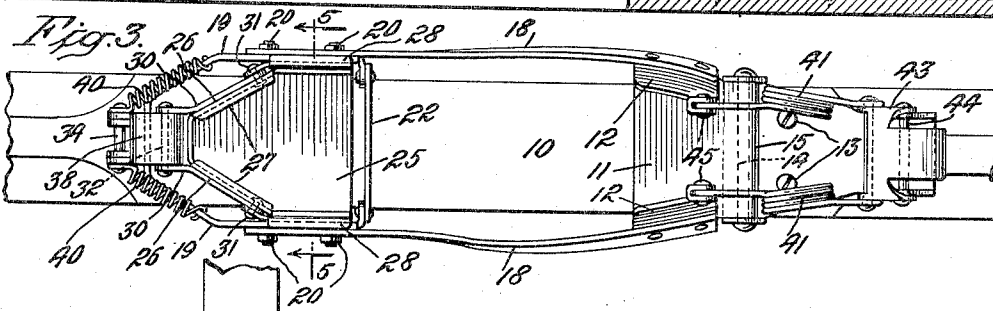
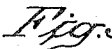
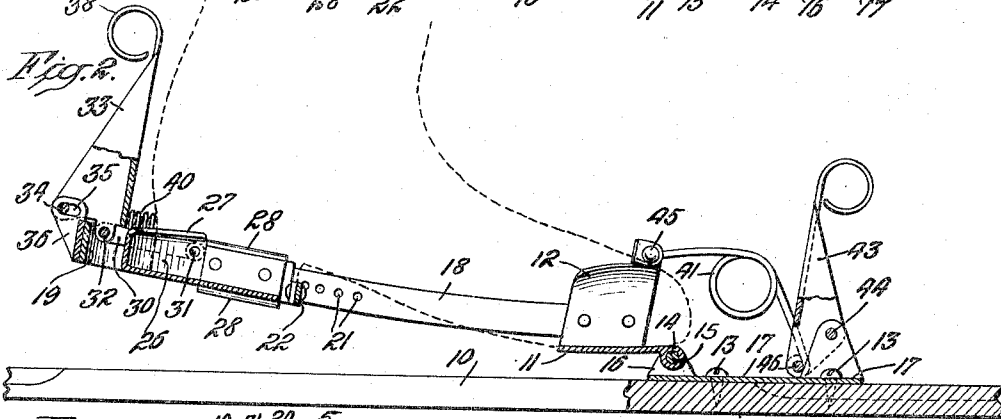
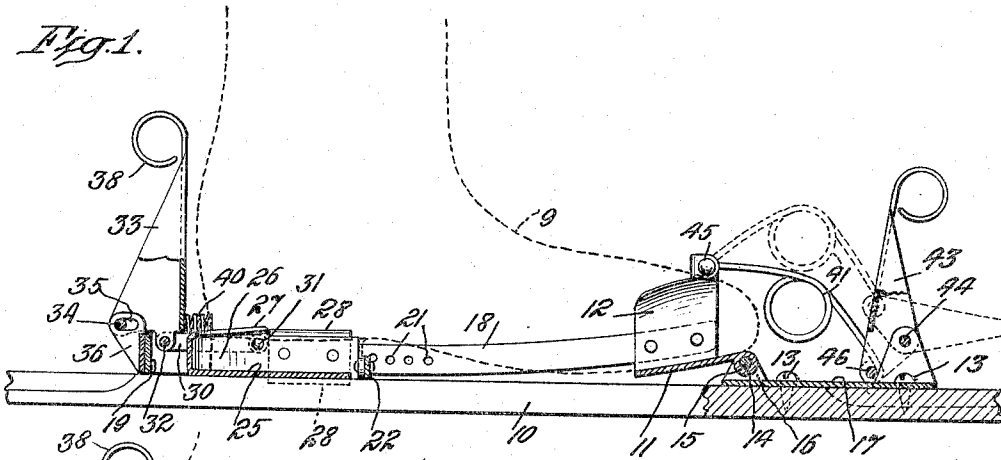
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SKI BINDING

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SKI BINDING

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6 Claims. (Cl. 208-184)

This invention relates to an improved ski binding.

A feature of the invention resides in the provision of a novel ski binding which holds the boot rigid with respect to the ski for turning or edging the latter, so that superior control of the ski is afforded, as is particularly important for downhill running, while, at the same time, the binding permits requisite relative movement of the boot and ski for walking or climbing.

A more specific feature of the invention resides in the provision of a ski binding which includes a rigid frame for holding the boot firm from heel to toe, and in which the frame is pivoted to permit the boot to swing about an axis across the ski, means being provided for securely attaching the binding to the boot in a simple manner, so that the binding is easy to put on and take off, and so that when on, the boot is for practical purposes one with the ski when the latter is to be turned or edged, while the boot may move with respect to the ski as in walking.

Still another feature of the present invention resides in the provision of a ski binding of the above character including novel means for tending to maintain the heel of the binding on the ski, and more particularly in simple and effective mechanism for varying the pressure which tends to keep the heel of the boot flat on the ski.

A further feature lies in a ski binding which includes a novel and superior type of heel clamp, more especially a clamp which is carried by the binding for engaging the heel by a sliding or wedging action.

Other features reside in certain combinations of different parts of the binding which cooperate to achieve the various advantages, including effective control of the skis, desired relative movement of the boots and skis, and ease in putting on and taking off the bindings, without the need for troublesome or cumbersome parts which may either interfere with the full use of the skis under all sorts of running, turns or falls, or may have to be detached from the skis from time to time.

A primary object of the invention resides in providing such a binding which not only satisfies the foregoing objects in a superior manner, but which at the same time is simple and inexpensive to manufacture, sturdy and durable in service, and easy to put on and take off.

Other features, objects and advantages of the present invention will in part be pointed out and in part become apparent in connection with the following detailed description of one form of ski binding illustrating the present invention, refer-

ence being had to the accompanying drawing, wherein:

Fig. 1 is a side elevation, partly in section, showing one form of binding in accordance with the invention, assembled with a ski and boot;

Fig. 2 is a view similar to Fig. 1, but showing the binding somewhat raised from the ski as in walking;

Fig. 3 is a plan view of the form of construction shown in Figs. 1 and 2;

Fig. 4 is a central vertical section of a portion of the form of binding shown in Fig. 1, but with the parts in position in which the boot is unclamped; and

Fig. 5 is a vertical section taken on the line 5-5 of Fig. 3, looking in the direction of the arrows.

Referring now to the drawing, there is shown at 10 the central portion of a ski upon which binding is mounted. The binding preferably comprises a toe piece or toe iron 11 having side portions 12 suitably conformed for receiving the toe of a ski boot 9, preferably so that the sole of the boot rests on the bottom of the toe piece and is wedged between the side portions 12 as the boot is pushed forward into the toe piece. If desired, the toe piece may be pivoted upon the ski for swinging about an axis transverse to the length of the ski, for instance, through a hinge consisting of an annular portion 14, formed on or secured to the toe piece, and a pintle 15 carried by suitable brackets 16 formed on a plate 17 secured to the ski in any convenient manner, for instance, through screws 13.

In order to provide for a firm control of the heel of the boot, there may be secured to portions 12 of toe iron 11, a pair of rigid side members 18 which extend back along opposite sides of the boot sole to the heel, and which are preferably connected by suitable cross pieces 22 to form a rigid frame unitary with the toe iron. Advantageously, a generally U-shaped member 19 may be provided extending around the back of the heel, and may be secured to members 18, for instance, through bolts 20 and openings 21 which enable the length of the frame to be adjusted.

For clamping the boot firmly in the rigid frame, there may be provided a sliding wedge-shaped clamp for engaging the heel of the boot and urging it forward into the toe piece, means being connected with the clamp for holding it in proper position and releasing it when it is desired to remove the boot from the binding. Such device may comprise a heel plate 25 having

upstanding side walls 26 arranged to form a wedge-shaped clamp for bearing against the heel of the boot when the heel plate 25 is urged forwardly. A 60° angle between the side walls 26 gives especially good results. The side walls 26 preferably have inwardly extending flanges 27 formed to overlie the top of the heel and thus assist in preventing the boot from slipping out of the binding. The flanges 27 advantageously incline downwardly toward the back. In order to enable the heel piece 25 to slide forward and backward, any convenient type of channel members 28, for instance, may be secured to the heel piece, or formed therewith, for receiving and sliding along parallel side portions of the rigid frame.

For urging the heel piece forward into engagement with the heel of the boot, and maintaining it in such position so that the boot will be held securely in the binding, there may be provided a pair of links 30, pivoted at their forward ends, through bolts 31, upon the side walls 26 of the heel piece, and pivoted at their rear ends, for instance through a pin 32, upon a lever 33, which lever may be mounted for rocking about a pivot pin 34. This pivot pin 34 is advantageously mounted in suitable slots formed in a member 36 secured to the rear end of portion 19 of the frame as shown in Fig. 4, so that the lever 33 and its fulcrum 34 may slide forward and backward slightly for purposes hereafter mentioned. Lever 33 may have a finger piece 38 formed thereon, preferably at its upper end. In order to assist in maintaining the heel piece 25 against the heel of the boot, and in order to urge the boot forward into the toe piece at all times, suitable coil or other type springs 40 may be attached in any convenient manner to the portions 19 of the rigid frame and to the fulcrum element 34, so that there is a resilient clamping action. Through this construction, provision is made for taking up slack if the boot sole softens or moves further up into the toe piece during use. Also somewhat different sizes of boots may be accommodated.

When a boot is in the binding, as shown in Figs. 1 and 2, and the lever 33 is in the position shown in these figures, the arm of the lever between the fulcrum 34 and the pivot 32 has passed over dead center, and the tendency is to maintain the parts in the desired positions, and also for the springs 40 to wedge the heel piece 25 against the boot. When it is desired to take off the binding, it is merely necessary to snap the lever 33 over the dead center position, and push its upper end down as shown in Fig. 4, whereupon the heel plate 25 is drawn to the rear and the heel of the boot may then be lifted, so that it is possible to easily step out of the binding.

It will be appreciated that there is thus provided a binding in which the heel of the boot is firmly held in a rigid frame, in line with the toe, and in which the frame is pivoted adjacent its forward end upon the ski, so that the boot is one with the ski as far as turning or edging the ski is concerned, but so that the boot is free to move as in walking or climbing. Moreover, while a rigid frame is provided for holding the boot, the resilient clamp for the heel serves to securely hold the boot in the binding at all times. On the other hand, it is easy to release the heel piece so that the boot can be removed from the binding quickly and easily, for instance, after a fall.

It is often desirable to urge the heel of the boot to lie flat against the top of the ski, particularly in down-hill running, and for this purpose there may be provided suitable springs, such as coil springs 41, having their forward ends pivoted as at 46 upon a suitable lever 43, and having their rear ends pivotally attached to toe piece 11, as at 45, the springs being arranged to urge the rigid binding, and through it the boot heel, to lie flat on the ski. With the parts in the positions shown in full lines in Figs. 1 and 2, the force exerted by the springs 41 is slight and satisfactory for normal walking, climbing or easy down-hill running. The lever 43 may be mounted on a pivot 44 rigidly attached to the forward portion of the ski in any convenient manner. When the lever is thrown to the position shown in dotted lines in Fig. 1, the force of the spring is markedly increased, so that the heel of the boot will be held down with even greater force, when desired, as in fast running on steep slopes. It will be appreciated that the construction of the springs 41, and the lever 43, as well as the means of connecting these springs to the toe piece and lever, may be varied considerably. However, through the present construction, there is provided a superior means of maintaining the boot flat during down-hill running, as is desirable, which means does not have to be separately attached, but which is carried with the ski along with the other parts of the binder, and which may be adjusted by a simple manipulation.

Through the present spring device at the front of the boot, in cooperation with the other features described, there is provided the desired tendency to hold the heel flat, since force of the spring is transmitted directly through the rigid frame to the rear of the boot. Furthermore, this means eliminates the need for separate heel springs which have to be frequently detached and reattached in use, and which often become tangled with the opposite ski.

In short, the construction provides a particularly rigid, simple and durable device which being composed substantially entirely of metal and being permanently secured to the ski, avoids the disadvantages of detachable straps which may become loose and be lost.

The terms and expressions which have been employed are used as terms of description and not of limitation, and there is no intention, in the use of such terms and expressions, of excluding any equivalents of the features shown and described, or portions thereof, but it is recognized that various modifications are possible within the scope of the invention claimed.

I claim:

1. A ski binding of the character described comprising a toe piece adapted to receive and firmly engage the toe of a boot, a rigid frame extending along the sides of the boot to the heel, a heel clamp carried for sliding with respect to said frame, resilient means to urge said clamp against the heel of the boot to hold the boot in the binding and to release said clamp, and means to mount said frame on the ski for pivoting about an axis transverse to the length of the ski, said means being constructed and arranged to maintain the binding rigid, lengthwise of the ski, whereby said boot is firmly integrated with the ski for turning or edging the latter.

2. In a ski binding, in combination, a pivoted rigid frame including side members extending to the heel of the boot, a heel clamp carried by said side members for sliding with respect thereto,

and means mounted on said frame in back of said clamp and between the sides of the frame for urging said clamp against the heel of the boot, said means comprising a pivoted lever and resilient connections between said frame and clamp for pressing the clamp against the heel of the boot to hold the boot in the binding.

3. In a ski binding, in combination, a pivoted rigid frame including side members extending to the heel of the boot, a heel clamp carried by said side members for sliding with respect thereto, said clamp being wedge-shaped and having rearwardly inclined flanges for overlying upper edges of the heel of the boot, and means mounted on said frame in back of said clamp and between the sides of the frame for urging said clamp against the heel of the boot.

4. In a ski binding, in combination, a rigid frame adapted to engage the heel of the boot, means to pivot said frame on the ski, and means carried by said frame and being constructed and arranged for clamping the boot in the frame, said

means including a lever, a sliding pivot for said lever carried by said frame, a heel clamp operatively connected with said lever, and resilient means adapted to constantly urge said lever and clamp forward.

5. In a ski binding, in combination, a rigid frame adapted to receive a ski boot and hold the same rigid from heel to toe, means to pivot said frame upon the ski adjacent the forward part of the frame, a heel clamp carried by said frame, and resilient means carried by the forward end of the ski and connected to said frame, said resilient means including a lever for varying the force of the said means, and said means being constructed and arranged to urge said frame to lie flat upon the ski.

6. A ski binding as claimed in claim 1, including means mounted on the forward end of the ski and connected to said frame for urging the same to lie flat on the ski.

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