

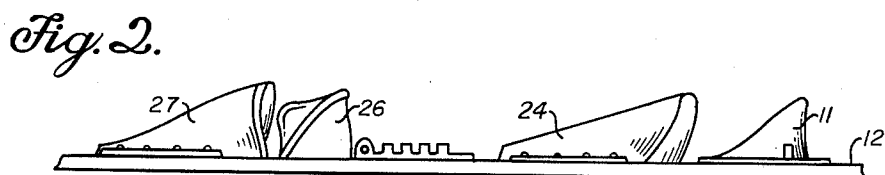
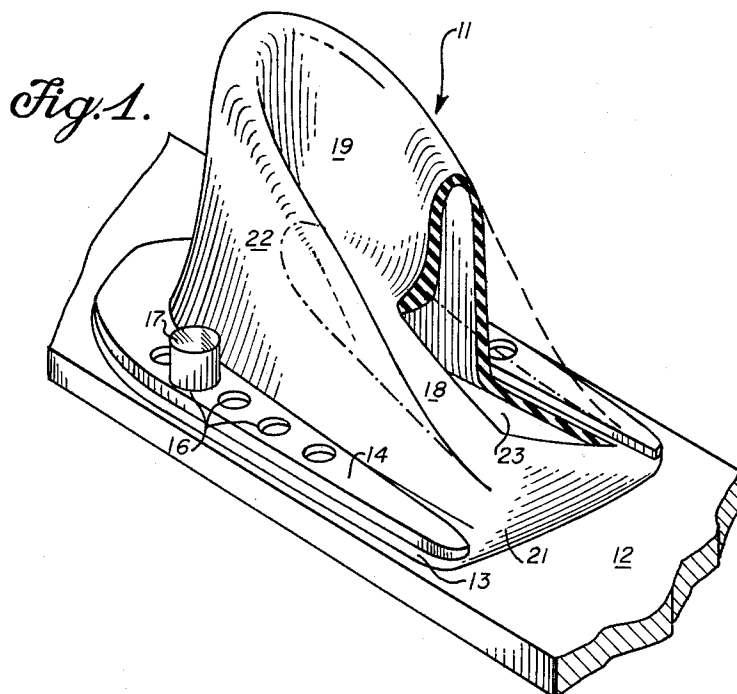
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WATER SKI BINDING

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1

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WATER SKI BINDING

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The present invention relates to water ski bindings and more particularly to an improved heel binding for use on single slalom water ski.

The sport of water skiing is enjoyed by many millions of persons annually. Most skiers after only limited experience at ordinary runs with two skis soon advance to the use of single or slalom skis. Single slalom skiing is almost exclusively engaged in by intermediate and advanced water skiers. Slalom skiing is more spectacular than ordinary two ski skiing. It requires considerably more skill and coordination, but is much more thrilling and challenging to the skier.

In slalom skiing only one ski is utilized. Both of the skier's feet are placed in tandem position upon the ski. In skiing stance the rear leg is flexed while the skier continues to stand flat upon the ski. Although the forward portion of the rear foot is restrained by a flexible binding, the flexed stance results in a continuous tension upon the calf muscles whereby they become tired and soon fatigue. In addition, during wake jumping, in hard turns, and crossing rough portions, water very often washes over the rear foot with sufficient force to kick the rear foot out of the toe binding thereby causing loss of control and spills.

The rear heel binding of the invention provides a unique solution to the problem causing fatigue in the calf muscles of the skier and in addition retains the rear foot within the ski binding during all maneuvers. The heel binding comprises a unitary semi-flexible heel portion wherein the sole portion is inclined to retain the skier's heel in a flexed position. Upwardly projecting rim portions grip the sides of the heel. Due to the semi-flexible nature of the heel binding material and to the unique structure of the binding, pressure upon the inclined sole portion causes the rim to grip the sides of the skier's foot and thereby retain it firmly in place.

Accordingly, it is a principal object of the invention to provide a heel binding for the rear foot of a slalom water skier.

Another object of the invention is to provide a slalom ski rear heel binding which supports the heel of the rear foot in an inclined position thereby eliminating tension on the rear leg calf muscles.

Still another object of the present invention is to provide a semi-flexible slalom water ski rear heel binding which grips the skier's heel when pressure is applied downwardly upon the binding.

Another object of the invention is to provide a slalom ski heel binding which is easily adjustable to fit various foot sizes.

Yet another object of the invention is to provide a slalom ski heel binding that prevents the skier's rear foot from being kicked out of the binding during maneuvers.

The invention will be better understood by reference to the specification, infra, and to the drawing in which:

FIGURE 1 is a partially cut-away perspective view of the heel binding in position on a portion of the slalom ski; and

FIGURE 2 is a side elevation of a single slalom water ski illustrating the positions of the various foot bindings thereon.

With reference to FIGURE 1 there is shown a generally U-shaped heel binding 11 retained in position

2

on the upper surface of a slalom water ski 12 (only a portion thereof is illustrated). The base of the heel binding 11 is formed into a U-shaped flange 13 which flange is maintained in direct contact with the ski 12 by means of a U-shaped metallic clamp 14. Clamp 14 is placed on top of flange 13 and is retained in position by means of machine screws (not shown) which are affixed at opposite sides to the slalom ski 12 and project upwardly therefrom through holes formed in flange 13 and through corresponding holes 16 formed into metal clamp 14. A series of these holes 16 are formed into clamp 14 and flange 13 ranging from front to back along both sides of the clamp and flange. The clamp 14, flange 13 and associated binding 11 is retained upon the ski by means of large knurled nuts 17 (only one illustrated) screwed down upon the machine screws. The entire heel binding assembly 11 may be adjusted in a forward or rearward position upon the ski by simply unscrewing nuts 17, lifting the assembly from the machine screws, repositioning the screws through the desired holes 16 and reassembling nuts 17 thereupon.

Referring to heel binding 11 in more detail it is seen that the binding includes an inclined sole portion or ramp 18 having a U-shaped configuration. Sole portion 18 is inclined upwardly and rearwardly with respect to the front of ski 12. Sole portion 18 is smoothly faired along its periphery upwardly into heel rim portion 19. Heel rim portion 19 is generally U-shaped, however, being of identical height as sole portion 18 at the forward edge 21 of heel binding 11, but rising to an increasing height above sole portion 18 as the rim 19 extends to the rear of binding 11. Rim 19 doubles back upon itself and extends downwardly to form side walls 22 of the heel binding 11. Side walls 22, in turn, are faired into flange 13, previously mentioned.

The heel binding 11, with the exception of metal clamp 14, the machine screws, and nuts 17 is constructed from a suitable semi-flexible material, such as rubber or plastic, readily available in commerce. The binding may be fabricated by means well known in the art, e.g., molding. In any case, the binding 11 is fabricated to form a hollow chamber 23 defined by the under surface of sole 18, the inside surfaces of rim 19 and walls 22, and the upper surface of ski 12. Chamber 23 is sealed by flange 13 and by the forward edge 21 of binding 11. Thus it can be seen from FIGURE 1, that flange 13 is forced by metal clamp 14 into sealing contact with ski 12, while forward edge 21 bears flat against ski 12. In operation, when the skier's foot is secured in binding 11, his weight effectively forces the forward edge 21 into sealing relationship with ski 12, thereby sealing chamber 23 around its entire periphery. It should be noted that in the event binding 11 is fabricated from a suitable soft or flexible material, chamber 23 need not be provided within binding 11. Instead chamber 23 would be completely filled with the soft, flexible material. Generally, however, in the interest of economy of material, a more rigid rubber or plastic is selected to form binding 11, whereby chamber 23 is provided therein.

With reference to FIGURE 2, heel binding 11 is illustrated in position on a slalom ski 12 and in relation to the other bindings. Specifically heel binding 11 is positioned rearwardly of rear foot toe binding 24. Rear toe binding 24, in turn, is positioned rearwardly and at a distance from adjustable forward heel binding 26. Heel binding 26 is positioned rearwardly from front foot toe binding 27. Taken all together toe bindings 24 and 27 and heel bindings 11 and 26 provide complete security for both the front and back foot of a slalom water skier.

It will be appreciated that due to the use of a semi-flexible material of construction for the heel binding and

3

because of the particular configuration thereof, several advantages accrue to the slalom skier when using the heel binding. The inclined sole portion 18 retains the skier's heel in an inclined relation to the ski itself. By holding the rear heel in this inclined position, tension of the rear leg calf muscles is greatly reduced, and resultant fatigue thereof is virtually eliminated.

In addition the provision of chamber 23 coupled with the semi-flexible nature of the binding material results in the reduction of shock transmission to the skier's foot during wake crossing or in traveling over rough water.

It should also be noted that when the skier applies his weight to the heel binding 11, the sole portion 18 is depressed. Due the semi-flexible nature of the binding material and to its unique configuration, rim 19 is forced inward to hug or cup the upper portions of the skier's heel, thereby firmly retaining the heel in position under all skiing conditions. Greater pressure upon the heel only serves to deform rim 19 further inward and to grip the skier's heel more tightly. Conversely, when the skier removes his weight from the rear heel, the resilient heel binding 11 returns to its original shape and the skier may freely move his heel therefrom.

There has been described, supra, what are considered to be the preferred embodiment of the slalom water ski heel binding, modifications may be made therein without departing from the spirit of the invention, and it is intended to cover all such as fall within the scope of the appended claims.

What is claimed is:

1. A semi-flexible slalom water ski heel binding comprising a U-shaped rearwardly and upwardly inclined heel ramp, a resilient U-shaped heel gripping rim integral with and forming the periphery of the raised portion of said ramp, the upper portions of said rim being free

4

to move radially inward when pressure is exerted downward upon said ramp, side wall support means secured to said ramp and rim, and clamping means attached to said binding to secure the binding to a water ski.

2. In combination with a slalom water ski, a semi-flexible rear heel binding comprising a generally U-shaped sole portion, said sole portion inclined upwardly and rearwardly in relation to said ski, a rim portion integral with and extending upwardly from at least a part of the periphery of said sole portion, a generally U-shaped side wall integral with and supporting said sole and rim, and a horizontally extending flange secured to the base of said side wall, and clamping means attached over said flange and secured to said ski.

3. The combination of a slalom water ski and an adjustable rear heel binding therefor comprising a resilient U-shaped rearwardly upwardly inclined sole portion, a resilient heel-gripping rim portion extending upwardly around the raised part of said sole portion along the periphery thereof, a semi-flexible side wall integral with said rim and supporting said rim and sole portion, a U-shaped horizontal flange formed into the base of said wall, a rigid U-shaped clamp secured over the upper surface of the flange, screw means affixed to the upper surface of said ski and extending upwardly through adjustment holes coaligned in said flange and clamp, and a nut positioned on said screw to retain the heel binding on said ski.

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