This invention relates to binders for connecting water skis with the user's feet. Some forms of binders are adjustable according to the length of the user's feet, by making provision whereby the customary heel counter of each binder which receives the heel of the foot, may be adjusted toward or from the vamp which receives the greater part of the foot. With some forms of such adjustable binders, not only has the construction been rather complicated and difficult to adjust under even more or less ideal conditions, but the difficulty has often been increased due to accumulation of sand in portions of the adjusting means when the skis are not used and carelessly on beaches and when the towing boat stirs up sand from the bed of the body of water upon which the skis are being used.

The present invention has aimed to provide a new and improved adjustable binder of simple construction and minimizing the possibility of sand accumulation. The novel features and objects in view that will become apparent as the nature of the invention is better understood, the same consists in the novel form, combination and arrangement of parts hereinafter more fully described, shown in the accompanying drawings, and claimed.

In the drawings:

FIG. 1 is a plan view showing a ski binder constructed in accordance with the invention;
FIG. 2 is an enlarged vertical longitudinal section on line 2—2 of FIG. 1;
FIG. 3 is a vertical transverse section on line 3—3 of FIG. 2;
FIG. 4 is a top view of the plate which carries the heel counter;
FIG. 5 is a longitudinal edge view of the plate shown in FIG. 4;
FIG. 6 is a rear end view of the same plate;
FIG. 7 is a bottom view of the dog for holding the counter-carrying plate in adjusted position;
FIG. 8 is a longitudinal edge view of the dog;
FIG. 9 is a top view of the ratchet plate which coasts with the dog;
FIG. 10 is a longitudinal section on line 10—10 of FIG. 9;
FIG. 11 is a fragmentary top view showing the rear end portion of one of the tracks which mount the counter-carrying plate; and
FIG. 12 is an inner side view of the portion of the track shown in FIG. 11.

Preferred construction has been illustrated and will be readily apparent from the drawings, but attention is invited to the possibility of making variations.

A conventional vamp 15 is shown as suitably secured at 16 upon the ski 17 but the present invention resides in the mounting and adjusting means for the heel counter 18.

A horizontal plate 19 is provided upon which to mount the heel counter 18. This plate 19 is of the shape shown in FIG. 4. It is provided with parallel longitudinal edges 20, with a curved notch 21 in its front end, and with a rearwardly tapered tail portion 22 having an opening 23 disposed centrally of the plate width. The heel counter 18 extends around the edges of the notch 21 and is secured to the plate 19 by means of a U-shaped clamping plate 24 and screws 25.

A guard wall 26 projects upwardly from the tail portion 22. This guard wall comprises two parallel longitudinal portions 27, and a transverse portion 28 connecting the front ends of said longitudinal portions 27. The rear ends of the wall portions 27 are equally spaced laterally from the opening 23, and the wall portion 28 is spaced forwardly from said opening 23 and disposed near the U-shaped clamping plate 24.

Two parallel longitudinal tracks 29 have longitudinal grooves 30 in their inner sides receiving the edges 20 of the counter-carrying plate 19. These tracks 29 are secured upon the ski 17 by screws 31 and the rear ends of their grooves 30 are closed by stops 32 which prevent accidental rearward sliding of the plate 19 from said grooves. Accidental forward sliding from the grooves is prohibited by the vamp 15 and its securing means 16.

The tracks 29 support the plate 19 in upwardly spaced relation with the ski 17, providing a space 33 through which water may flow to constantly wash out any sand which might otherwise accumulate and interfere with positional adjustment of said plate 19.

A flat elongated ratchet plate 34 is disposed upon the ski 17 under the plate 19 and extends longitudinally of the ski 17 midway between the edges thereof. This ratchet plate 34 is secured upon the ski by means of screws 35 and the upper side of said plate 34 is in sliding contact with the lower side of the plate 19. The ratchet plate 34 is formed with longitudinally spaced openings 36 providing it with ratchet teeth 37 between said openings.

An elongated dog plate 38 is disposed within the confines of the U-shaped guard wall 26 and is pivotally mounted between its ends on the longitudinal portions 27 of said guard wall by means of a transverse pin 39. The rear end portion of the dog plate 38 has a beveled nose 40 which projects downwardly through the opening 23 and is receivable in any of the openings 36 of the ratchet plate 34. A coiled compression spring 41 is interposed between the front end portion of the dog plate 38 and the underlying tail portion 22 of the plate 19; and said dog plate has a socket 42 which the upper end of said spring 39 is seated.

The spring 41 biases the dog 38, 40 to operative position but allows the nose 40 to click over the ratchet teeth 37 when the plate 19 is pushed forwardly to decrease the distance between the heel counter 18 and the vamp 15. Manual depression of the front end of the dog will release the nose 40, allowing rearward adjustment of the plate 19 and heel counter 18.

In any position to which the plate 19 may be adjusted, it shields all of the openings 36, except those which may be exposed behind said plate, against entrance of sand, and any sand which may enter the exposed openings may be easily cleaned out. During use of the ski, there is no tendency of sand in the water to flow forwardly under the dog plate 38 and down through the opening 23; and sand cannot enter the space under said dog plate by flowing downwardly between the latter and the guard wall 27, as the clearance between said dog plate and wall is non-trivial. This clearance is exaggerated in the drawings. Any sand suspended in the water and reaching the space 33 between the plate 19 and the ski 17, is rapidly washed rearwardly between the edges of the ratchet plate 34 and the tracks 29 and discharged with no danger of accumulating and later interfering with adjustment of the plate 19.

It is preferable to provide the tail portion 22 of the plate 19 with downwardly projecting lugs 43 straddling the ratchet plate 34.

The various elements may be readily constructed by die-casting or otherwise casting them from light metal such as aluminum, but the tracks 29 may well be formed from nylon or the like, if desired.

It will be seen from the foregoing that novel provision has been made for attaining the desired ends, and while
there is herein shown and described the preferred embodiment of the invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

1. In an adjustable water ski binding in which a heel counter is adjustable toward and from a vamp; a horizontal plate carrying said heel counter and having a central opening spaced rearwardly from said heel counter, parallel longitudinal tracks secured upon the ski and mounting said horizontal plate for forward and rearward adjustment, a central longitudinal ratchet plate underlying the aforementioned horizontal plate and secured upon the ski, a dog pivotally mounted on said horizontal plate and having a nose extending downwardly through the aforesaid opening to engage the teeth of said ratchet plate, and a spring acting on said dog for biasing it to operative position, said dog having an accessible portion by means of which it may be manually released.

2. A structure as specified in claim 1, in which said horizontal plate is upwardly spaced from the ski to cause water-suspended sand to be washed rearwardly between said ratchet plate and said tracks and said horizontal plate closely overlying said ratchet plate and preventing the entrance of foreign matter into said ratchet plate.

3. In an adjustable water ski binder in which a heel counter is adjustable toward and from a vamp; a horizontal plate carrying said heel counter and having a central opening spaced rearwardly from said heel counter, parallel longitudinal tracks secured upon the ski and mounting said horizontal plate in upwardly spaced parallel relation with the ski, a flat central longitudinal ratchet plate between said horizontal plate and the ski and secured upon the latter, said ratchet plate having longitudinal edges spaced inwardly from said tracks, said ratchet plate being capable of being disengaged therefrom to provide it with ratchet teeth between said openings, the upper side of said ratchet plate being substantially in contact with the lower side of said horizontal plate, a dog plate overlying said horizontal plate behind said heel counter, said dog plate being elongated longitudinally of the ski and disposed centrally thereof, the rear end of said dog plate being disposed over the aforesaid opening of said horizontal plate and having a ratchet nose extending downwardly through this opening for reception in any of said openings of said ratchet plate, a guard wall projecting upwardly from said horizontal plate, said guard wall having longitudinal portions disposed at the longitudinal edges of said dog plate and also having a transverse portion disposed at the front end of said dog plate, a transverse pivot between the ends of said dog plate and mounting this plate on said longitudinal portions of said guard wall, and a spring between the front end of said dog plate and said horizontal plate, said spring biasing said dog plate to a position in which said ratchet nose will engage said ratchet plate and hold the aforesaid horizontal plate against rearward shifting, said ratchet nose being releasable by manually depressing the front end of said dog plate.

References Cited in the file of this patent

UNITED STATES PATENTS

2,823,397 Wagner ---------------- Feb. 18, 1958
2,866,210 Romig ---------------- Dec. 30, 1958

FOREIGN PATENTS

816,349 France ---------------- Apr. 26, 1937