May 19, 1964 M. G. PIERSON 3,133,296

SKI BINDING

Filed Dec. 13, 1962 2 Sheets-Sheet 1

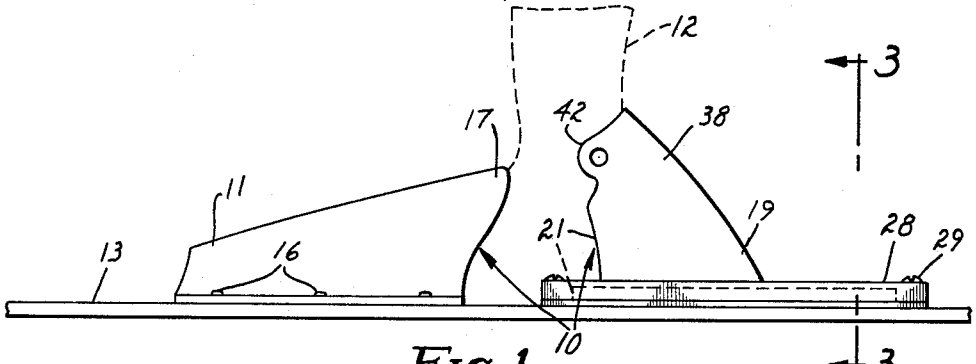

FIG. 1

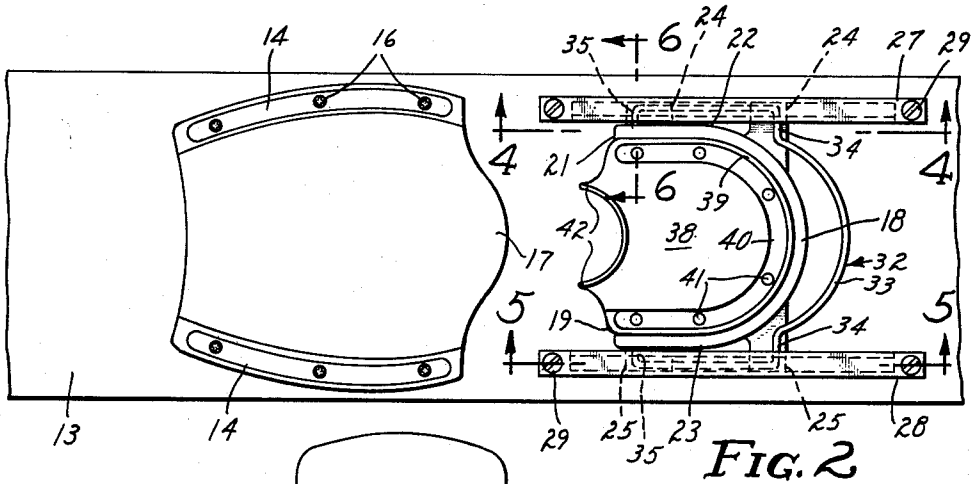

FIG. 2

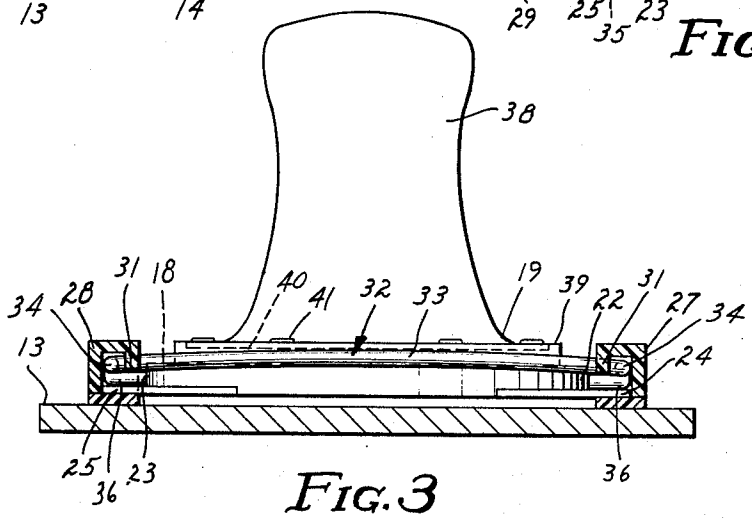

FIG. 3

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SKI BINDING

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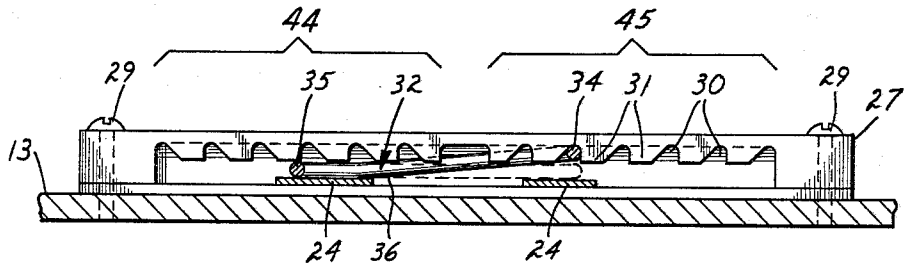

FIG. 4

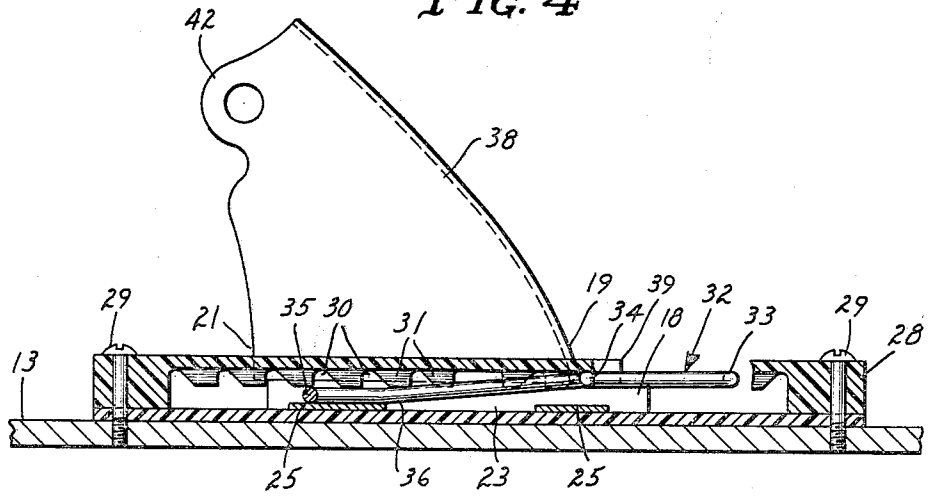

FIG. 5

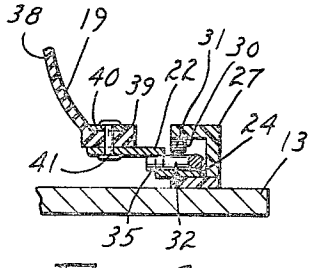

FIG. 6

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United States Patent Office 3,133,296 Patented May 19, 1964

3,133,296

SKI BINDING

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Filed Dec. 13, 1962, Ser. No. 244,350
4 Claims. (Cl. 9—310)

This invention relates to new and very useful improvements in water skis.

More particularly, this invention relates to a ski binding for securely fastening a foot in place on a water ski.

As those familiar with the art of water skiing will appreciate, water skis are used while the wearer is barefoot. Conventionally, water ski bindings for holding a foot in place on a water ski utilize a flexible vamp and a cup-shaped counter for encompassing a heel of the foot. The vamp is usually rigidly secured along its side edges to the surface of the ski while the counter is provided with some means for movement along the longitudinal axis of the ski towards and away from the vamp. The art has long sought simple, safe and reliable means for longitudinally moving the counter toward and away from the vamp and for locking the counter in a fixed position so as to hold the foot of the wearer upon the upper surface of the ski once the vamp and the counter are securely and comfortably engaged with the foot at the time the ski binding is put on the foot of the wearer.

It is an object of this invention to provide a simple, safe, sturdy and reliable ski binding for water skis in which the counter portion is adjustable.

It is another object of this invention to provide an improved water ski binding having an adjustable heel engaging portion provided with a novel and very effective adjustment mechanism to produce selective sliding movements of the heel engaging portion.

It is another object of this invention to provide an improved water ski binding in which there is a reliable heel adjustment mechanism constructed of few parts which are easily assembled, positive in operation, and which resists rearward thrust thereagainst.

It is another object of this invention to provide a ski binding having an adjustable heel whose position on the upper surface of a ski is fixed by means of a single latch member.

Other and further objects of this invention will become apparent to those skilled in the art from a reading of the present specification taken together with the drawings, in which:

FIG. 1 is a side elevational view of an embodiment of a ski binding of the invention showing a part of the associated water ski;

FIG. 2 is a top plan view of the ski binding of FIG. 1 showing a part of the associated water ski;

FIG. 3 is a transverse sectional view taken along the line 3—3 of FIG. 1;

FIG. 4 is a longitudinal sectional view taken along the line 4—4 of FIG. 2;

FIG. 5 is a longitudinal sectional view taken along the line 5—5 of FIG. 2; and

FIG. 6 is an enlarged, detail, transverse sectional view taken along the line 6—6 of FIG. 2.

Referring to the drawings there is seen in FIG. 1 a ski binding herein referred to in its entirety by the numeral 10. The forward portion of the ski binding comprises a flexible vamp 11 which is adapted to receive

the fore part of a foot 12 (shown in dotted lines). In this embodiment the lateral side edges are adapted for fastening the vamp 11 to the upper surface of a water ski 13. Here the fastening means in the embodiment shown comprises a pair of fastening plates 14 which are conveniently secured over the lateral side edges of the vamp 11 to the surface of the ski 13 by means of screws 16. It will be observed that the vamp 11 has an integral upstanding tongue 17 which overlies the upper part of the instep adjacent the ankle of the foot 12.

Turning now to the heel portion 19 of the ski binding 10 there is seen a generally horizontally disposed slide plate 18 which has a front side 21 and a pair of lateral sides 22 and 23. In the front side is defined a U-shaped recess adapted to receive the heel portion 19 of foot 12. The lateral sides 22 and 23 each have a pair of laterally outwardly-extending edge portions 24 and 25, respectively. These edge portions 24 and 25 (each paired) are adapted for slidable reception in each one of a pair of elongated gibs 27 and 28, respectively. Each gib 27 and 28 is adapted to be secured to the upper surface of the ski 13, as by means of screws 29, in laterally spaced, parallel relationship rearwardly of the vamp 11. The upper and lower walls of the gibs 27 and 28 define opposed channels for slidable reception of the adjacent side edge portions 24 and 25 of slide plate 18. In the embodiments shown, both gibs 27 and 28 have longitudinally spaced notches 30 defined in one of the walls of the channel defined in each gib 27 and 28. In the embodiment shown in FIGS. 1–6, for example, each gib 27 and 28 has a downturned lip 31 depending from its top side and each lip 31 has formed in its depending edge the desired notches 30 which are spaced so as to be a short distance above the slide plate 18.

Extending generally longitudinally of each gib 27 and 28 and having the end of each of its lateral side members 35 pivotally secured to each lateral side edge 22 and 23, respectively, of slide plate 18 for common movements therewith is a resilient latch member 32. The latch member 32 has a locking portion 34 receivable in selected ones of said notches 30 so as to lock the slide plate 18 against rearward movement longitudinally of the gibs 27 and 28. A handle portion 33 is provided across the trailing ends of the latch member 32. The locking portion 34 is held in yieldingly biased position toward the notches 30 by means of a slight bend in each lateral resilient side member 35 somewhat rearward of the point where the ends of each lateral side member 35 are journalled in the side edges 22 and 23 of slide plate 18. The bend is sufficient to produce a pair of fulcrum portions 36 in the initial link of each lateral side member 35 adjacent the point of journalling as shown, for example, in FIG. 5. The remaining portion of each lateral side member 35 between the fulcrum portion 36 and the locking portion 34 thus serves to yieldingly lever locking portion 34 against the notches 30. The locking portion 34 is formed at the end of each lateral side member 35 as an inwardly laterally extending shoulder and it is at the ends of this shoulder that the handle portion 33 connects as can be seen, for example, in FIG. 2. Thus, in the embodiment shown, when the handle portion 33 is depressed downward toward the top surface of ski 13, each locking portion 34 of latch member 32 is moved out of engagement with notches 30, thereby per-

mitting rearward longitudinal movement of the slide plate 18. When the handle portion is released, the latch member 32 returns to its locking configuration and the locking portion 34 comes into engagement with the notches 30, thereby locking the slide plate 18 against rearward movement longitudinally of the gibs 27 and 28. Of course, forward movement, longitudinally, of slide plate 18 is facilitated by disengaging the locking portions 34 of latch member 32 by depressing the handle portion 33.

A cup-shaped counter 38 of flexible material is formed so as to encompass the heel portion of foot 12. Counter 38 is mounted upon the slide plate 18, and for this purpose, the counter 38 is provided with an outwardly extending flanged region 39 about its bottom side edges. A U-shaped fastening plate 40 fits over the flanges 39 and rivets 41 extend from the U-shaped fastening plate 40 through flanges 39 into the slide plate 18. Note that the counter 38 is conveniently fitted with forwardly extending flanges 42 so that the heel of foot 12 will fit back into the cup-shaped counter 38 permitting the flanges 42 to yieldingly hold the ankle bone of foot 12.

It will be observed that the notches 30 in each gib 27 and 28 together comprise a first longitudinally extending group 44 and a second longitudinally extending group 45. Each notched group 44 and 45 is positioned end to end with respect to the other. The individual notches in each group 44 and 45 are all alike. Each notch 30 has a leading portion forming a camming surface and a trailing portion forming an abutment surface. The leading portions and trailing portions, respectively, of the notches of the first group 44 are reversed from those of the second group 45; thus, the same gib 27 and 28 can be used for a right hand or a left hand position thereby permitting the locking portions 34 of the latch member 32 to be held in a yielding locking engagement with each notched lip 31 of the pair of gibs 27 and 28 used in the ski binding 10 of the invention so as to lock the slide plate 18 against rearward movement longitudinally of the gibs 27 and 28.

My invention has been thoroughly tested and found to be completely satisfactory for the accomplishment of the above objects, and while I have shown and described a preferred embodiment, I wish it to be specifically understood that the same is capable of modification without departure from the spirit and scope of the appended claims.

The claims are:

1. A ski binding for holding a foot in place on a water ski comprising:

(*a*) a flexible vamp adapted to receive the forepart of a foot and having lateral side edges adapted for fastening to the upper surface of said ski,

(*b*) a generally horizontally disposed slide plate,

(*c*) a pair of gibs adapted for fastening to the upper surface of said ski behind said vamp, each gib being in spaced parallel relationship to the other and adapted to engage at least a portion of one lateral side edge of said slide plate, said gibs coacting to hold said slide plate against movement except along the longitudinal axis of said ski binding,

(*d*) each gib having a downturned lip depending from its top side, each lip having a notched edge spaced a short distance above said slide plate,

(*e*) a latch member of generally U-shaped rigid resilient material defining a handle portion, locking portions and paired spaced lateral side members, the ends of said latch member being journalled for arcuate movements in said slide plate and each lateral side member being adapted to extend generally longitudinally of each gib beneath the notched edge of each downturned lip, said locking portions being formed as inwardly laterally extending shoulders at the rear end of each lateral side member and the handle portion joining the inward ends of each such shoulder, each such locking portion being held in yielding locking engagement with said notched

edge of the adjacent downturned lip to lock said slide plate against rearward movement longitudinally of said gibs, and

(*f*) a flexible heel engaging counter secured to said slide plate.

2. The ski binding of claim 1 wherein:

(*a*) each notched edge has regularly spaced like notches,

(*b*) each notch having a leading portion forming a camming surface and a trailing portion forming an abutment surface, and

(*c*) each notched edge being idivided into two longitudinally spaced parts so that the respective leading and trailing edges of the notches of one part are reversed relative to those of the second part.

3. A ski binding for holding a foot in place on a water ski comprising:

(*a*) a flexible vamp adapted to receive the forepart of a foot and having lateral side edges adapted for fastening to the upper surface of said ski,

(*b*) a generally horizontally disposed slide plate,

(*c*) a pair of gibs adapted for fastening to the upper surface of said ski behind said vamp, each gib being in spaced parallel relationship to the other and adapted to engage at least a portion of one lateral side edge of said slide plate, said gibs coacting to hold said slide plate against movement except along the longitudinal axis of said ski binding,

(*d*) each gib having a downturned lip depending from its top side, each lip having a notched edge spaced a short distance above said slide plate,

(*e*) each notched edge having regularly spaced, like notches each of which has a leading portion forming a camming surface and a trailing portion forming an abutment surface,

(*f*) each notched edge being divided into two longitudinally spaced parts so that the respective leading and trailing portions of the notches of one part are reversed relative to those of the second part,

(*g*) a latch member of generally U-shaped, rigid, resilient material defining a handle portion, paired locking portions, and paired laterally spaced side members, the ends of said latch member being journalled for arcuate movements in said slide plate, each lateral side member being adapted to extend generally longitudinally of each gib beneath the notched edge of each downturned lip, each locking portion being formed as an inwardly laterally extending shoulder at the rear end of each lateral side member, and the handle portion joining the inward ends of each shoulder,

(*h*) each gib being so positioned that the locking portion of the adjacent latch member is held in yielding locking engagement with said notched edge so as to lock said slide plate against rearward movement longitudinally of said gib, and

(*i*) a flexible heel engaging counter secured to said slide plate.

4. A ski binding for holding a foot in place on a water ski comprising:

(*a*) a flexible vamp adapted to receive the forepart of a foot and having lateral side edges adapted for fastening to the upper surface of said ski,

(*b*) a generally horizontally disposed slide plate,

(*c*) a flexible heel-engaging counter secured to said slide plate,

(*d*) a pair of elongated gibs adapted to be secured to the upper surface of said ski in laterally spaced parallel relationship rearwardly of said vamp and having vertically spaced upper and lower walls and defining opposed channels for slidable reception of adjacent side edge portions of said slide plate longitudinal of said ski,

(*e*) each gib having longitudinally spaced notches in

one of said upper and lower walls of the channel and opening toward the other of said walls,

(*f*) and a generally U-shaped latch member defining, an intermediate handle portion, laterally spaced side portions each extending generally longitudinally of and adjacent a different one of said gibs and each having one end connected to said slide plate for common sliding movements therewith, and laterally extending locking portions connecting the other ends of said side portions with said handle portion,

(*g*) each of said locking portions being yieldingly urged generally vertically toward said notches in the

adjacent one of said gibs to releasably lock said slide plate against rearward movement longitudinally of said gibs.

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