

United States Patent

Leach

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[54] BINDER FOR WATER SKIS

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[58] Field of Search: 9/310 AA, 310 R; 267/158, 171, 267/182; 24/186, 188, 206, 252 R

[56] References Cited

UNITED STATES PATENTS

2,988,761	6/1961	Dalpiaz.....	9/310 AA
2,823,397	2/1958	Wagner.....	9/310 AA
3,102,279	9/1963	Bennett.....	9/310 AA

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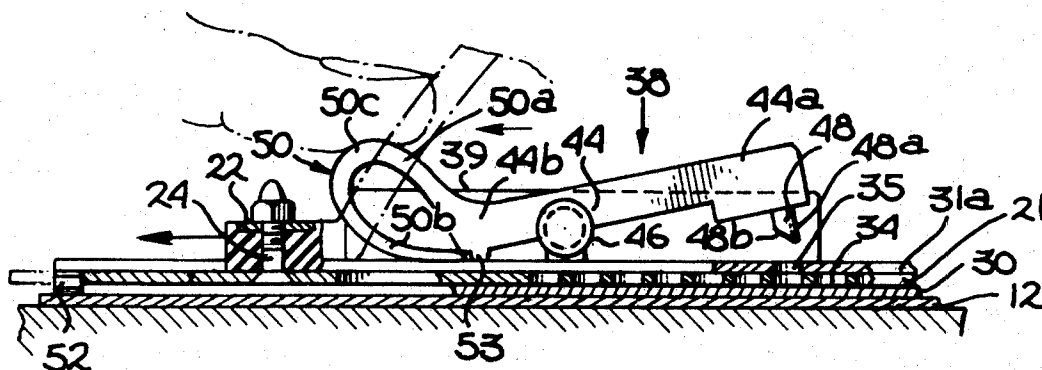
Attorney—Robert E. Geauque

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ABSTRACT

A binder for water skis having a rigid foot piece and a heel piece attached to a mounting plate for movement relative to the foot piece. Guides are located at opposite sides of the heel piece and have tracks for receiving the edges of the mounting plate. A latch means is provided to normally hold the heel piece from movement away from the foot piece while permitting movement of the heel piece towards the foot piece. The latch means comprises a pivotally mounted arm having a tapered latch pin normally located in a hole in one of the guide means and in one of a plurality of adjacent holes along a side edge of the mounting plate of the heel piece. The taper on the pin permits the latch pin to ratchet and allow the heel piece to move towards the foot piece.

4 Claims, 6 Drawing Figures



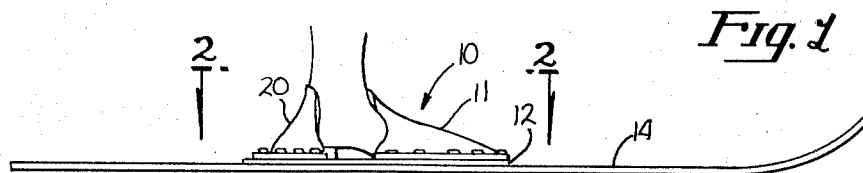


Fig. 1

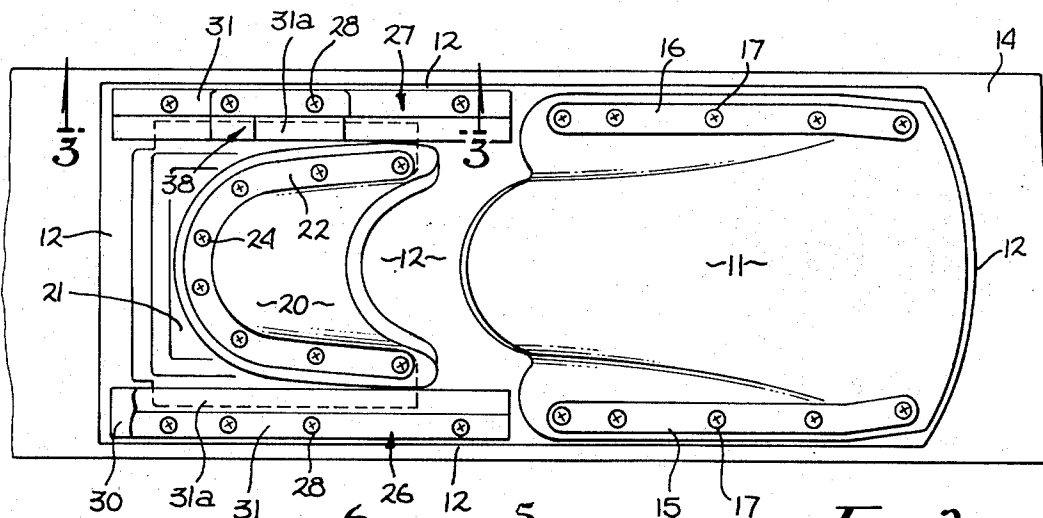


Fig. 2

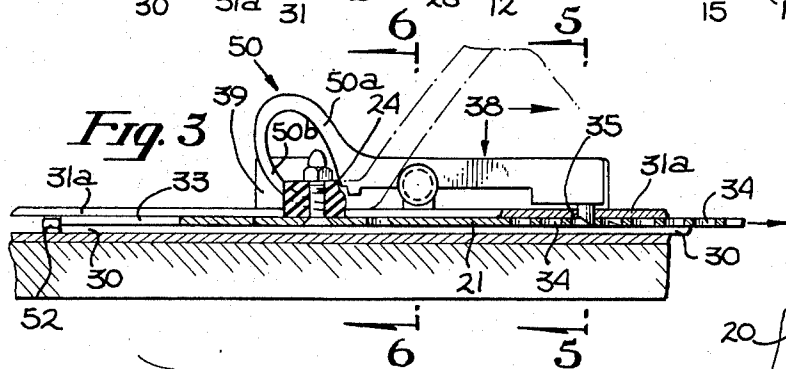


Fig. 3

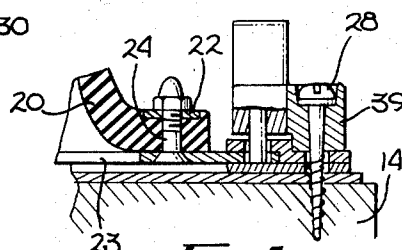


Fig. 5

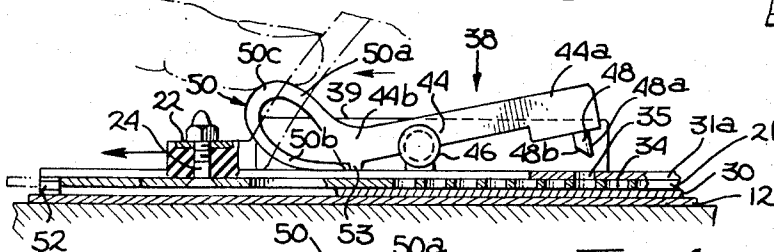


Fig. 4

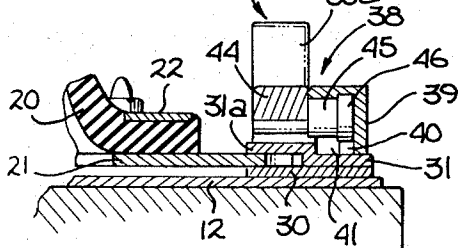


Fig. 6

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BINDER FOR WATER SKIS

BACKGROUND OF THE INVENTION

Skis utilized for water skiing are equipped with binders which permit a skier to quickly release either ski from either foot. Such binders usually have a fixed foot piece which cooperates with an adjustable heel piece which is slidable longitudinally toward the foot piece to firmly grip the foot. The heel piece is generally secured against the heel of the skier by means of a latch mechanism consisting of a pawl which engages one of the teeth of a rack positioned longitudinally of the ski. A number of different latch mechanisms of this type have been devised to releasably hold the heel piece and such mechanisms have been difficult to operate and expensive to manufacture.

SUMMARY OF THE INVENTION

The present invention provides a binder for water skis having a fixed foot piece cooperating with an adjustable heel piece. The heel piece is secured and released by a latch mechanism which is easily reached by the skier and easily operated. Further, the latch mechanism is of simplified structure and very dependable in use. A releasable latch pin is employed by the latch mechanism and is located on the end of a pivoted latch arm so that the pin can move substantially transversely of the ski into and out of any one of a plurality of adjacent holes in the side edge of the mounting plate which supports the heel piece. The end of the pin is flat and one side is tapered in a direction to permit the pin to skip from hole to hole in the mounting plate when the heel piece is forced toward the foot piece. However, no skipping can result from a force in a direction to separate the heel piece from the foot piece since the opposite side of the pin is substantially transverse to the edge of the hole in the mounting plate in which the pin is located.

A spring device is attached to the latch arm and biases the arm in a direction to hold the pin in any one of the adjacent holes. The spring comprises an integral loop extension of the pivoted latch arm and comprises an upwardly extending portion which is rigid and a flexible downwardly extending portion which is deflected to produce the biasing spring force. In order to release the pin from any one of the holes in the mounting plate and permit movement of the heel piece away from the foot piece, it is only necessary for the skier to press on the latch arm, thereby bending the flexible end portion.

It is therefore an object of the present invention to provide a binder for water skis which employs a latch mechanism movable substantially transversely to the ski.

Another object of this invention is to provide a binder for water skis in which a latch pin is mounted at one end of a pivoted latch arm and a spring device is formed integrally with the arm at its other end, said spring device comprising a rigid portion connected with a flexible end portion.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of the binder attached to the foot of a skier.

FIG. 2 is a top plan view of the binder along line 2—2 of FIG. 1.

FIG. 3 is a vertical section along line 3—3 of FIG. 2 illustrating the latch arm and pin in position to lock the heel piece against movement away from the foot piece.

FIG. 4 is a sectional view similar to FIG. 3 with the latch arm raised by the skier to release the heel piece.

FIG. 5 is a transverse vertical section along line 5—5 of FIG. 3 showing the mounting block for the latch arm, and

FIG. 6 is a transverse vertical section along line 6—6 of FIG. 3 showing the pivot for the latch arm.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The binder 10 of the present invention comprises a foot piece 11 formed from suitable rubber or plastic material in the shape to receive the portion of the foot forward of the ankle, as illustrated in FIG. 1. A layer of padding 12 is placed on the upper surface of the ski 14 and the edge of the foot piece engages the padding. The foot piece and padding are secured to the ski by two rigid side strips 15 and 16. Screws 17 pass through the side strips and through the padding 12 and thread into the ski board 14, which can be constructed of laminated wood covered on opposite sides with thin plastic sheet material.

Heel piece 20 is also constructed of suitable rubber or a plastic material and is shaped to engage the heel of the skier, as illustrated in FIG. 1. A rigid, thin mounting plate 21 for the heel piece is located on padding 12 and has a U-shaped cut-out 23 so that the heel of the skier can contact the padding. The lower edge of the heel piece is located around the edge of the cut-out 23, and a U-shaped strip 22 is located above the lower edge. Bolts 24 pass through the strip 22, the edge of the heel piece and the mounting plate to secure the heel piece to the mounting plate.

Side guides 26 and 27 for the mounting plate 21 are secured to opposite side edges of the ski 14 by means of screws 28 threaded into the ski. Each guide comprises a lower plate member 30 and an upper plate member 31 having a portion engaging plate 30 and a raised portion 31a spaced from plate 30 to provide a slot track 33 for guiding an edge of mounting plate 21. One edge 21a of mounting plate 21 contains a plurality of adjacent openings 34 and the raised portion 31a of guide 27 contains a single opening 35 under which the opening 34 passes as the heel piece and mounting plate 21 move along the guides 26 and 27.

A latch mechanism 38 is mounted on the upper plate member 31 of guide 27 and comprises a mounting block 39 which is secured by two of the screws 28. The block 39 contains a cavity consisting of two U-shaped slots 40 and 41, the slot 40 being slightly higher and wider than slot 41 (see FIG. 6). A pivot pin 45 extends to one side of latch arm 44 and has a slightly enlarged end 46. Prior to attachment of block 39 to the ski, end 46 is inserted into slot 40 and pin 45 is inserted into slot 41 in order to pivotally connect latch arm 44 to the mounting block 39. The enlarged end 46 locks against the side of slot 41 to prevent lateral movement of the arm away from the block.

End 44a of arm 44 mounts a latch pin 48 in position to move transversely into and out of opening 35 as the latch arm rotates in opposite directions about the pivot shaft 45. The front side 48a of the pin is straight and

transverse to the ski while the back side 48b is tapered to permit movement of the heel piece only in the direction toward the foot piece when the pin is in locking position, as will be later described.

The other end 44b of arm 44 has attached thereto an integral spring device 50 in the form of a loop somewhat elliptical in shape. The portion 50a between end 44b and approximately the apex 50c of the loop is rigid, and the end portion 50b reduces in thickness to be flexible. The end portion 50b, prior to assembly, extends substantially perpendicular to arm 44 in its free condition (now shown) and during assembly, the end portion 50b is deflected toward end 44b so that it bears against raised portion 31a of guide 27 and produces a spring bias force on the arm.

As illustrated in FIG. 3, the force of spring 50 retains the latch arm 44 in the down, locking position so that the pin 48 extends through opening 35 and through one of the openings 34. The straight pin surface 48a will therefore resist any movement of the heel piece away from the foot piece so that the binder cannot be accidentally released from the foot during skiing. However, with the pin in the locked position, the heel piece can be moved toward the foot piece since the tapered surface 48b will engage the back side of successive holes 34 and the pin will ratchet from one hole to the next as a result of the force on the heel piece directed toward the foot piece. Thus, the heel piece can be forced tightly against the heel of the skier after insertion of the foot into the foot piece.

As illustrated in FIG. 4, when it is desired to loosen the heel piece, the skier presses down against the spring 50 at approximately the apex of the spring and forces the flexible end 50b toward the guide 27. This movement pivots the arm 44 and raises the pin 48 out of the openings 34 and 35 so that the heel piece can be moved toward the back end of the ski. A raised stop 52 is located at the back end of each guide plate 30 in order to limit the backward movement of the heel piece and keep it in the track 33. Also, the bottom surface of end 44b of arm 44 has a projection 53 which engages and stops the end of spring portion 50b and limits the downward movement of the arm 44.

Since the spring 50 can be operated by a downward finger pressure and is located to one side of the heel piece, it is easy for the skier to operate the latch arm 44 in order to release the heel piece. It is understood that the padding 12 extends the full length of the ski binder to engage the bottom of the entire foot. Other suitable pivotal mountings and springs could be used for the latch arm and suitable plastic material can be utilized for the rigid elements of the binder so that the binder is of light and strong construction.

I claim:

1. A binder for a water ski having a foot piece rigidly fixed to the water ski and a heel piece movable relative to said foot piece comprising:

a mounting plate for said heel piece;
means on opposite sides of said ski for guiding said mounting plate and heel piece for movement toward and away from said foot piece,
latch means for normally preventing movement of said heel piece away from said foot piece,
said latch means comprising a pivotally mounted latch arm located above said ski and movable in a plane substantially transverse to said ski,

a latch pin secured to said arm and movable downwardly toward said ski through openings in one of said guide means and said mounting plate; and

means for biasing said latch arm to normally position said pin in said openings,
said openings comprising a single opening in said one guide means and a plurality of adjacent openings in one side edge of said mounting plate, said plurality of openings being movable with said mounting plate successively into alignment with said single opening.

2. A binder as defined in claim 1 wherein the side of said pin nearest said foot piece is substantially transverse to said openings and the opposite side is tapered in a direction from its end upwardly and away from said foot piece in order to ratchet from hole to hole in said mounting plate upon application of a force to move the heel piece toward said foot piece, said transverse side of said pin causing said pin to normally remain in the same opening in said mounting plate and prevent movement of said heel piece away from said foot piece.

3. A binder for a water ski having a foot piece rigidly fixed to the water ski and a heel piece movable relative to said foot piece comprising:

a mounting plate for said heel piece;
means on opposite sides of said ski for guiding said mounting plate and heel piece for movement toward and away from said foot piece,
latch means for normally preventing movement of said heel piece away from said foot piece,
said latch means comprising a pivotally mounted latch arm located above said ski and movable in a plane substantially transverse to said ski;
a latch pin secured to said arm and movable downwardly toward said ski through openings in one of said guide means and said mounting plate; and

means for biasing said latch arm to normally position said pin in said openings,
said biasing means comprising a spring in the form of a loop extension of said latch arm having an apex, the side of said loop nearest said arm being rigid and the other side of said loop being flexible, the flexible side being deflected to bear against said one guide means to provide the bias on said latch arm, said latch arm being movable downwardly by pressure applied at substantially said apex in order to remove said pin from said openings and release said mounting plate for movement toward and away from said foot piece.

4. A binder for a water ski having a foot piece rigidly fixed to the water ski and a heel piece movable relative to said foot piece comprising:

a mounting plate for said heel piece;
means on opposite sides of said ski for guiding said mounting plate and heel piece for movement toward any away from said foot piece,
latch means for normally preventing movement of said heel piece away from said foot piece,
said latch means comprising a pivotally mounted latch arm located above said ski and movable in a plane substantially transverse to said ski,
a latch pin secured to said arm and movable downwardly toward said ski through openings in one of said guide means and said mounting plate,
means for pivotably mounting said latch means,

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said pivot means comprising a block secured to said
ski and containing a cavity facing said latch means,
said cavity comprising inner and outer U-shaped
slots with said inner slot being slightly higher and
wider than said outer slot, and
a pivot pin connected to said latch means and ex-

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tending into said cavity, the end of said pin being
enlarged to be received by said inner slot and
being larger than said outer slot so that said pin is
retained in said cavity while being free to rotate.

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