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RETRACTABLE STABILIZER FOR WATER SKIS

Filed Aug. 12, 1958

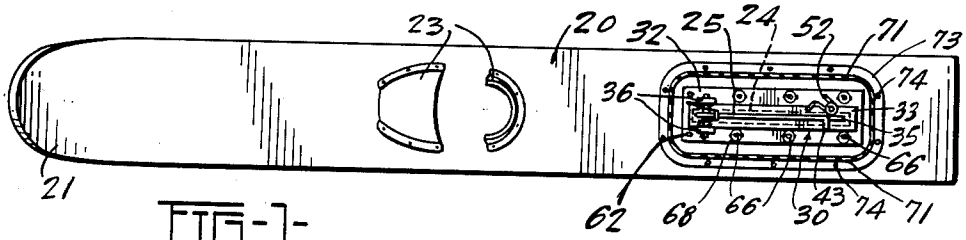


FIG-1-

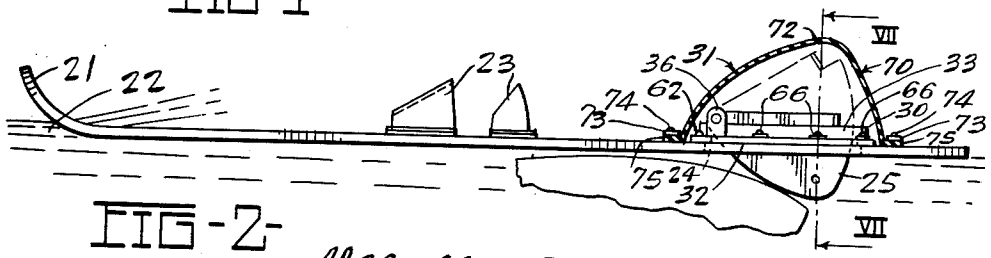


FIG-2-

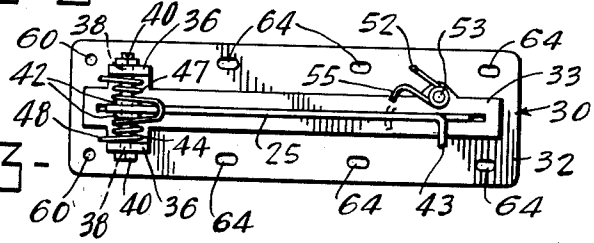


FIG-3-

FIG-4-

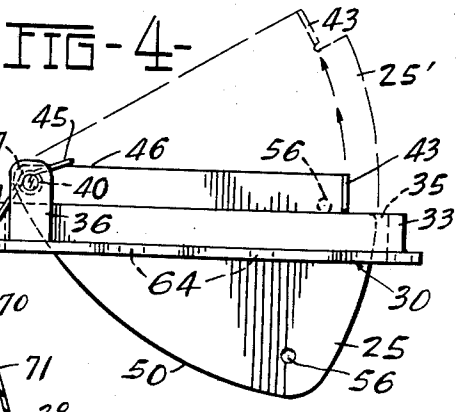


FIG-5-

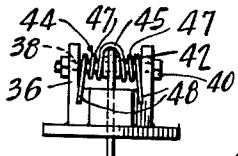
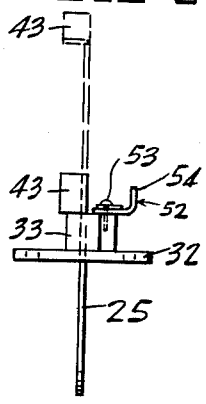


FIG-6-



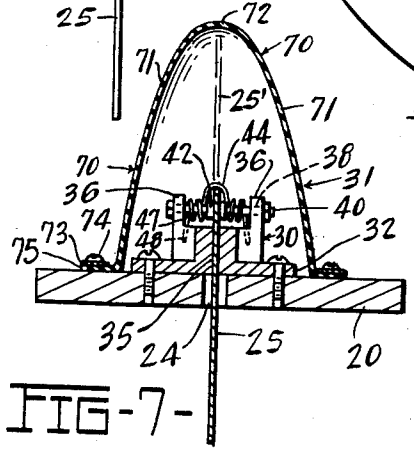


FIG-7-

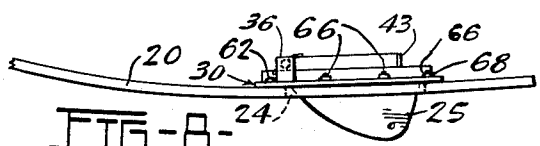


FIG-8-

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RETRACTABLE STABILIZER FOR WATER SKIS

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This invention relates to stabilizer fins for water skis. More particularly, it deals with stabilizer fins for skis which may be used for stunt skiing, wherein a skier in being towed by a speedboat may ski onto a ski jump ramp to be elevated thereby into the air, thence to return to the surface of the water at sufficiently high speed to remain on the surface thereof to continue skiing thereon; the fin being temporarily retracted from use while the ski is moving on the ramp, but immediately being returned to its normal position to act as a stabilizer for the ski while in the water.

Water skiing generally has become an increasingly popular sport and associated with this sport is one variation known as ski jumping in which a person wearing water skis may be towed by a speed boat toward a ramp or float having an inclined top surface adapted to direct a skier upwardly at an inclined angle, the skier thence continuing in mid-air for a distance commensurate with the speed attained upon encountering the ramp, after which the skier drops again to the surface of the water to continue to ski thereon.

During such maneuvers, the skier may be traveling on the water at relatively high rates of speed, and the importance of having a stabilizer or fin on the bottom of a ski may be demonstrated by the resulting decrease in side slip of the ski when so equipped. However, such skis as have been used heretofore for jumping have been equipped with little more than a smooth straight elongated strip like fin, grooves, or runner strips to be adaptable to sliding on to a jump ramp, all of which may have been more or less ineffective due mainly to the fact that they were either too shallow, too complicated, or not readily retractable.

Accordingly, it is an object of this invention to provide new, simple, economic, efficient, effective, durable, stable and safe retractable stabilizer fins and mechanisms for water skis.

Another object of this invention is to provide an automatically retractable straight ahead direction stabilizer for a water ski, which is normally urged in a downwardly extending direction below the bottom of the ski, but which may be instantly retractable as the ski engages a jump-ramp during a skiing operation, or latched in a non-operating position.

Another object is to provide such a retractable stabilizer mechanism which may be applied to an existing water ski in a very simple manner.

Still another object is to provide a guard or cover over such a stabilizer mechanism which may extend above the ski and help to prevent bodily contact therewith and consequent injury to a user.

In general, this invention comprises a panel-like stabilizer fin preferably formed of a light metal such as aluminum and to be normally depending from the bottom of a water ski through a slot formed along the longitudinal axis of the ski, and toward the rear or trailing portion of the ski. A slotted mounting plate also preferably of aluminum or similar light weight metal may be adapted to be bolted or otherwise fastened to the ski, and may include a hinge support means adapted to permit vertical oscillation of the fin through said slot with a stop means on the fin for preventing excessive downward movement thereof. It also may comprise a resilient or spring means which may be associated with the

hinge for normally urging the fin downwardly in the slot, a manually operated latch means adapted for maintaining the fin in an upward or retracted position for use during stunt or backward skiing, and a cover or guard elemene associated with and over the device on the ski to preclude injury to a user.

The above mentioned and other features and objects of this invention and the manner of attaining them will become more apparent and the invention itself will be best understood by reference to the following description of embodiments of the invention taken in conjunction with the accompanying drawing, wherein:

FIG. 1 is a top plan view of a water ski, with one embodiment of a retractable stabilizing fin according to this invention being shown thereon, the cover guard for the fin being shown in section;

FIG. 2 is a side elevational view of the apparatus of FIG. 1, showing the fin in normal operating position as being about to encounter an obstacle in the water, the cover guard for the fin being shown in section;

FIG. 3 is a larger top plan view of only the stabilizer device of this invention illustrating the arrangement of the parts as they may be assembled as a unitary article of manufacture;

FIG. 4 is a side elevational view of the device of FIG. 3, with the fin also being shown in dotted lines in its non-operating elevated or retracted position;

FIG. 5 is a view of the front end of the device of FIG. 4 showing the pivot means for the fin;

FIG. 6 is a rear end elevational view of the device of FIG. 4 showing the fin in dashed lines in retracted position;

FIG. 7 is a cross-sectional view along the line VII—VII on FIG. 2 showing an arrangement of the device mounted on a ski with the cover guard mounted thereover; and

FIG. 8 is a fragmentary side elevational view of a portion of a ski of FIG. 2 with the stabilizing device mounted thereon, illustrating the action of the parts of the stabilizing device while under stress.

Referring now to FIGS. 1 and 2 of the drawing, and in order to increase the stability of a jumping water-ski during use and to encourage the followers of the sport to a greater participation therein, there may be provided a ski **20** having the usual upturned forward portion **21** to direct the ski normally upwardly over the surface of a body of water **22** while a skier is being towed thereon. A strap means or pocket **23** may be provided on the ski **20** to engage the foot of a user and to help in holding the ski on the user's foot. The ski **20** may be provided with a slot **24** through which there may be extended a retractable stabilizer fin **25** depending from a mounting device **30** which may be attached to the upper surface of the ski **20** in a manner to be described hereinafter. A more or less flexible cover or boot **31** may be provided to guard a user against injury when sudden undesired contact may be had with the stabilizer parts during use. This boot **31** will be described more fully hereinafter.

The mounting device **30** for the stabilizer fin **25** (see FIGS. 3 through 7) may comprise a main base plate **32** having formed thereon a centrally located elongated boss portion **33** having a slot **35** adapted to receive and to guide the fin **25** for vertical oscillation therein. This frame or mounting device **30** also may be provided with a pair of fulcrum arms **36**, rising from the base member **32**, and may have formed therein a pair of transverse axially aligned bores **38** adapted to receive a fulcrum pin **40**.

One end of the fin **25** may be welded or otherwise secured to a collar or hinge bushing **42** (see FIGS. 3 and 7) adapted to receive the fulcrum pin or bolt **40** around which the fin may be oscillated for the purpose of its

being raised or lowered in relation to the bottom surface of the ski **20**. A tab **43** or other stop means may be provided on the fin **25** and adapted to engage the top surface of the boss **33**, in a manner to limit the downward movement of the fin **25** (see FIGS. 3, 4).

There may be positioned also on the pin **40** a spring means **44** comprising a bight portion **45** normally resting against the upper edge portion **46** of the fin **25**, a pair of tensioning coils **47** encircling the pin **40** on each side of the bushing **42**, and termini **48** adapted to bear against the sides of the fulcrum support arms **36** in a manner to normally urge the fin **25** in a downward direction in the slot **35** of the guide and mounting device **30**.

The lower edge of the fin **25** may be of a sloping or curved formation **50**, although it may be formed instead with a straight line edge or any other shape as may be desired. The function of this edge **50** is to present a smooth lower camming surface, which when contacted by a jump ramp, rock or other object in the water, will cause the fin **25** to immediately rise upwardly in the slot **35** around the pivot pin **40** and against the tension of the spring means **44**. After completing the passage over the object, the fin **25** will be abruptly lowered to its normal operating position again by the action of the spring means **44**.

At times it may be desired to hold the fin **25** in its upwardly retracted position, and for this condition there may be provided a manual latch means **52** (see FIGS. 3 and 6) which may have a pivoted connection **53** on the boss **33** for the purpose of engaging or disengaging the fin in its retracted position. This latch means **52** may comprise an upturned manual grip portion **54** to facilitate operation of the latch, and a horizontally disposed arcuate fin engaging portion **55** adapted to enter a hole **56** in the fin **25** near the lower extremity thereof, when the fin **25** is withdrawn manually to its inoperative position **25'**. This retracted position may be of value when a skier desires to do a greater amount of side slipping, and to keep a forward alignment is of less importance, as in stunt or trick skiing.

Extreme flexing action of the ski may occur when the skier engages the jump ramp, or when encountering a submerged object (see FIG. 2), or when riding on rough water. Under such conditions the mounting device **30** may be constructed in a manner to minimize any structural deficiency of the parts by providing a more or less flexible connection for the device **30** on the ski. For this purpose there may be provided a pair of mounting holes **60** at the forward or leading end of the plate **32**, which holes may snugly fit a pair of screws **62** for securing the plate **32** on the ski **20** to substantially prevent longitudinal movement of the plate thereon. A plurality of elongated or slotted holes **64** may be provided along the remaining part of the mounting plate **32**, in order to permit a small amount of slippage between the plate **32** and the surface of the ski **20** when the ski is flexed abnormally (see FIG. 8). Screws **66** may be provided in these slots **64** to hold the plate on the ski. If desired, resilient washers or spacers **68** also may be provided to take up some or all of the space caused by the deflection of the parts while being stressed.

The cover **31** which serves as a housing for the stabilizing device or mechanism may comprise a boot-assembly or member **70** (see FIGS. 1, 2 and 7) having sides **71** which with the ends thereof may converge to a peak **72** of suitable height to enclose a space sufficient to accommodate the displacement of the fin **25** in its retracted position **25'**. A fastener ring **73** and screws **74** may be provided to secure a cooperating flange **75** formed along the edge of the boot **31** to the ski **20**, or by screws **62** and **66** to the base plate **32** of the mounting **30**, as desired. While the boot **31** is herein shown as a unitary molded element comprised of a flexible and durable rubber-like compound, it may be formed also of a more rigid material such as metal, or of certain types of plastics including reinforced plastics; it may also be formed sectionally, as of interfitting parts or it may be provided with an access door (not shown) to permit inspection or adjustment of the parts of the stabilizer device enclosed therewithin. The more flexible materials however may permit of a sufficient degree of manipulation in themselves to facilitate adjustment of at least some of the stabilizer parts, such as engagement or disengagement of the latch **52** without need for an access opening in the boot. In the event that other parts such as the spring member **44** are in need of adjustment it may be advantageous to remove the fastener ring **73** and boot assembly **70** in order to gain sufficient access to the stabilizer mechanism.

From the above description it may be seen that many advantages arise from the use of the device disclosed. Skis which may be equipped with the device, may be used either for ski jumping or for other types of stunting such as side slipping with very little adjustment of the device. The fact that the device may be manufactured and packaged as a unit for individual application to a user's skis is of great importance. One needs only to cut a slot of a predetermined size in the ski and the device may be readily attached. Furthermore skis of this type may have included therewith the device of this invention at the time of original manufacture of the skis.

While there is described above the principles of this invention in connection with specific apparatus, it is to be clearly understood that this description is made only by way of example and not as a limitation to the scope of this invention.

What is claimed is:

1. In a longitudinally stabilized water ski, the improvement comprising: a water ski with a media slot therethrough in the rear half thereof, and a retractable stabilizing device comprising: a mounting means for said stabilizing device fastened to the upper side of said ski around said slot, a second slot in said mounting device aligned with and over said slot in said ski, a fulcrum mounted transversely of said slots at the forward end thereof, a stabilizing fin having a pivot on said fulcrum and depending through said slots, resilient means for normally urging said fin downwardly through said slots, and means for locking said fin against the action of said resilient means in a non-operative position for said fin.

2. A stabilizing device according to claim 1 including means for limiting the downward movement of said fin through said slots.

3. A device according to claim 1 wherein said locking means is mounted on said mounting means.

4. A stabilizing device according to claim 1 including guard means mounted over said mounting means on top of said ski.

5. A new article of manufacture for attachment to a water ski having a slot formed therein, comprising: an oblong base plate located around said slot, a plurality of mounting holes along the sides of the base plate, a plurality of bolts associated with the mounting holes and the ski, an elongated boss portion having a slot therein disposed centrally and longitudinally along the top of the base plate and over said slot in said ski, and a stabilizing fin for the ski adapted for movement downwardly through the slots in the boss and in the ski to a ski stabilizing position.

6. An article of manufacture according to claim 5 including a resilient spring means adapted to normally urge said fin towards a downward position.

7. An article of manufacture according to claim 5 including stop means associated with the fin to limit the downward travel thereof.

8. An article of manufacture according to claim 5 including latching means associated with the fin adapted to maintain the fin in a non-operative position.

9. An article of manufacture according to claim 5

wherein some of said mounting holes in said base plate are elongated to permit linear slippage of said base plate with respect to said ski during deflection of said ski.

10. In a longitudinally stabilized water ski, the improvement comprising: a water ski with a medial slot therethrough in the rear half thereof, and a retractable stabilizing device comprising: a mounting means for said stabilizing device fastened to the upper side of said ski around said slot, a second slot in said mounting means aligned with and over said slot in said ski, a fulcrum mounted transversely of said slots at the forward end thereof, a stabilizing fin having a pivot on said fulcrum and depending through said slots, means for normally urging said fin downwardly through said slots, and a flexible boot guard means mounted over said mounting means on top of said ski.

11. An article of manufacture according to claim 5 including a pair of hinge posts at one end of the boss adapted to support a hinge pin therethrough, and means on said fin for pivotally mounting said fin on said pin for pivotal movement through said slots.

12. A retractable water ski fin assembly comprising a mounting bracket adapted to be secured to a water ski in alignment with a longitudinally extending vertically disposed slot formed in the aft portion of said ski, a panel-like vertically disposed and longitudinal extending fin, means pivotally securing the forward portion of said fin to said bracket with the aft portion of said fin movable between a retracted position above and an extended position below the lower surface of said ski, and means resiliently urging said fin toward an extended position.

13. The combination of claim 12 including means for selectively retaining said fin in a retracted position.

14. A retractable water ski fin assembly comprising a downwardly opening hollow and upstanding housing adapted to be secured to the upper surface of a water ski in overlying relation to a longitudinally extending slot formed in the aft portion of said ski, and panel-like vertically disposed and longitudinally extending fin, means pivotally securing the forward portion of said fin near the forward portion of said housing with the aft portion of said fin movable between a retracted position received substantially entirely within said housing and an extended position extending below the surface of said ski, and means resiliently urging said fin toward an extended position.

15. The combination of claim 14 including means for selectively retaining said fin in a retracted position.

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