April 30, 1963 D. J. MEYER 3,087,173

RETRACTABLE WATER SKI FIN

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Fig. 1

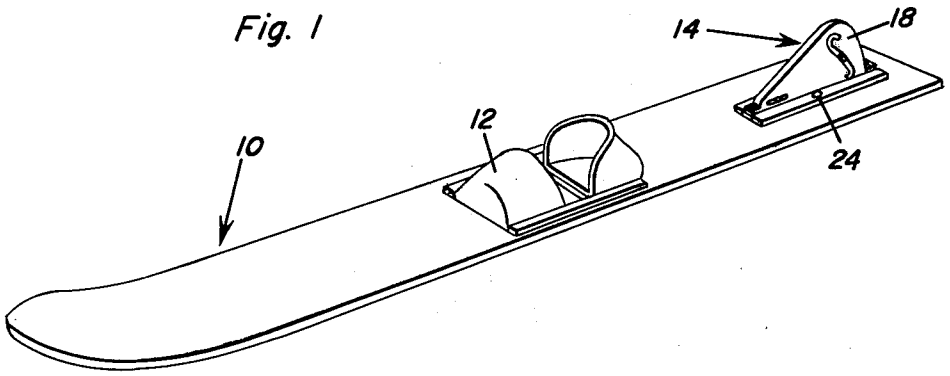


Fig. 2

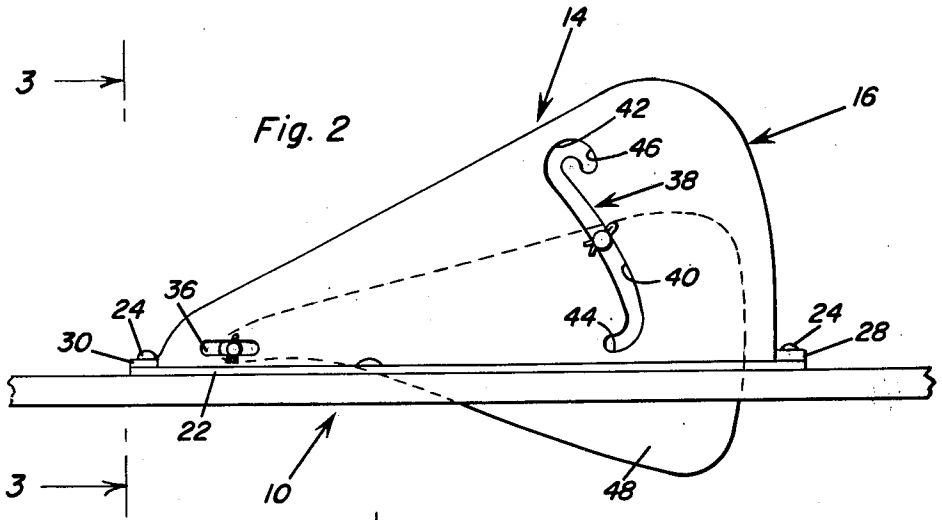
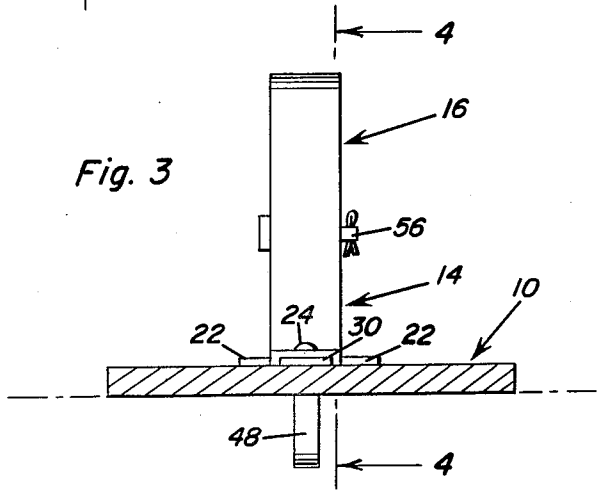


Fig. 3



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Fig. 4

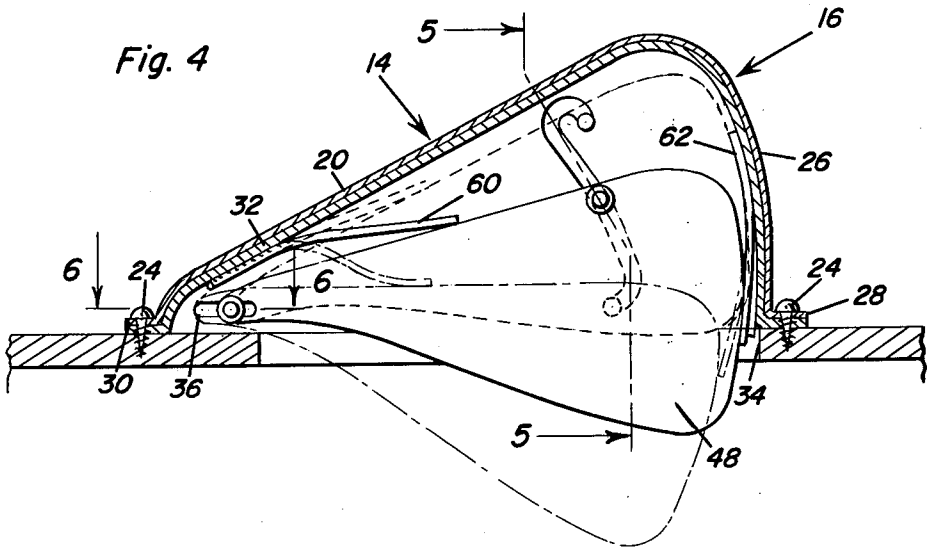


Fig. 5

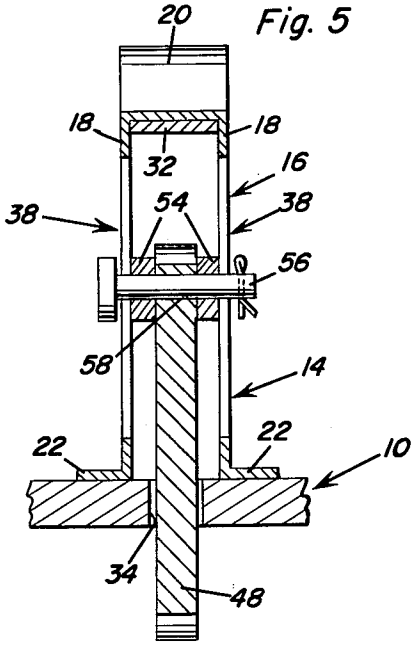
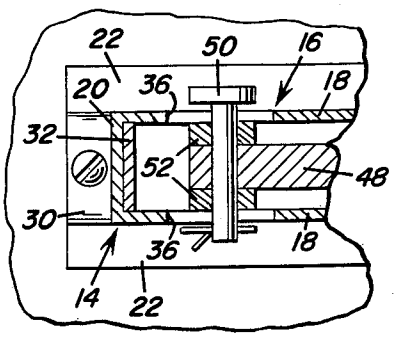


Fig. 6



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RETRACTABLE WATER SKI FIN

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This invention relates to a novel and useful water ski fin, and more particularly to a fin which may be retracted either manually by a water skier or automatically upon the striking of an obstruction by the bottom of the water ski to which the retractable fin is secured.

Water skiing is a sport which has been known and enjoyed for many years. Up until quite recently water skis were constructed in the conventional manner, that being a longitudinally extending board with an upwardly curving forward end, however, in the more recent years the sport has become increasingly popular and many variations of water skis have been devised to enable a water skier to execute numerous maneuvers.

It is quite common for a person who is active in the sport to own three or four different varieties of skis such as the conventional form, turnabout skis, slalom and shoe skis. The slalom, turnabout and conventional skis are similar in many respects. The conventional skis comprise a pair of skis as heretofore set forth having on the aft portion of the undersurface thereof one or two rudders which serve to stabilize the rear portion of the ski thus making it easier for a skier to control his skis while the turnabout skis are not provided with the rudders or fins inasmuch as it would be impossible to slide such a ski sideways across the surface of the water while skiing. The slalom ski is a single ski which is provided with a downwardly projecting fin which usually extends further below the lower surface of the ski than the rudders used on conventional skis.

The main object of this invention is to provide a ski which may be quickly adapted by the user to serve either as a conventional ski, a slalom ski, or a turnabout ski. The invention incorporates the use of a retractable fin which is adapted to be secured in alignment with a longitudinally extending vertically disposed slot formed in the aft portion of a water ski. A mounting housing is provided which overlies the slot and has pivotally secured to its forward portion the forward end of a fin which is foldable about a horizontally extending axis between a retracted position received within a housing disposed on the upper surface of the ski and an extended position depending below the lower surface of the ski. A means is provided for resiliently urging the fin to an extended position and a means is provided whereby the skier may selectively lock the skeg in the retracted position. Therefore, a pair of skis equipped with the retractable water ski skeg may be used in the conventional manner or the fins may be retracted to convert the skis into turnabout skis if desired. Further, it is to be noted that the pivotal movement of the fin to the retracted position is also effected upon the lower surface of the ski striking an object which also enables the skis to be used in jumping whereby the skegs or fins will be retracted upon the engagement of the skis with the ramp. Still further, a single ski equipped with the retractable water ski fin may also be provided with an additional shoe so as to convert that one single ski into a slalom ski.

Another object of this invention is to provide a retractable water ski fin construction which may be readily adapted to a ski or skis having been modified by the provision of a longitudinally extending vertically disposed slot formed in the aft portion of the ski or skis.

A further object of this invention is to provide a retractable water ski fin which is resiliently urged to a depending extending position but which will be automatically retracted upon the striking of a submerged object.

Still another object of this invention is to provide a retractable water ski fin which may be retained in a retracted position.

A final object to be specifically enumerated herein is to provide a retractable water ski fin which will conform to conventional forms of manufacture, be of simple construction, and easy to operate so as to provide a device that will be economically feasible, long lasting, and operable by even novice water skiers.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of the retractable water ski fin shown mounted upon the aft portion of a water ski;

FIGURE 2 is an enlarged side elevational view of the aft portion of the water ski seen in FIGURE 1 with the retractable fin shown in an intermediate position between the retracted and extending position;

FIGURE 3 is a transverse vertical sectional view taken substantially upon the plane indicated by the section line 3—3 of FIGURE 4;

FIGURE 4 is a longitudinal vertical sectional view taken substantially upon a plane indicated by the section line 4—4 of FIGURE 3;

FIGURE 5 is a transverse vertical sectional view taken substantially upon the plane indicated by the section line 5—5 of FIGURE 4; and

FIGURE 6 is an enlarged transverse horizontal sectional view taken substantially upon the plane indicated by the section line 6—6 of FIGURE 4.

Referring now more specifically to the drawings the numeral **10** generally designates a conventional form of water ski having secured thereon a foot shoe **12** and a retractable water ski fin assembly generally designated by the reference numeral **14**.

The retractable water ski fin assembly **14** comprises a mounting bracket or housing generally designated by the reference numeral **16** which includes a pair of spaced upstanding side walls **18** interconnected at their upper ends by means of a top wall **20**. The lower edges of the side walls **18** terminate in outwardly directed flanges **22** which are adapted to be secured to the upper surface of the water ski **10** by means of suitable fasteners **24**. The top wall **20** is inclined upwardly and rearwardly from the forward end of the housing **16** and terminates in a downwardly directed rear wall **26**. The rear wall **26** terminates in an outwardly directed flange **28** and the forward portion of the top wall **20** terminates in an outturned flange **30**. Fasteners **24** are also used to secure the flanges **28** and **30** to the ski **10**. If it is desired, a strap-like bracing element **32** may be provided which conforms to and underlies the top wall **20** and the flanges **28** and **30**.

The housing **16** is adapted to be secured in alignment and overlying relation with a longitudinally extending vertically disposed slot **34** formed in the aft portion of the ski **10**.

Formed in the forward portion of the housing **16** is a pair of aligned horizontally disposed longitudinally extending slots **36** which are formed in the side walls **18**. The side walls **18** are also provided with a second pair of slots generally designated by the reference numeral **38** which each include an upwardly and forwardly inclined midportion **40** which terminates in a rearwardly curving portion **42** at its upper end a forwardly curving portion **44** at its lower end. The rearwardly curving

portion 42 terminates in a downwardly curving portion 46.

Disposed within the housing 16 is a skeg or fin 48 which has secured through its forward end a pivot pin 50. Disposed on opposite sides of the fin 48 are a pair of spacing washers 52 which are suitably apertured and receive therethrough the pivot pin 50 to space the fin 48 from the side walls 18. The remote ends of the pivot pin 50 are slidably received in the aligned slots 36 so as to provide a pin and slot connection between the forward end of the fin 48 and the housing 16.

A pair of spacing washers 54 are also provided for the rear portion of the fin 48 which receive therethrough opposite end portions of a slide pin 56 which is secured through a suitable aperture 58 formed in the fin 48. The opposite ends of the slide pin 56 are slidably received in the slots 38.

Secured to the undersurface of the strap-like bracing element 32 adjacent the forward end of the housing 16 is a leaf spring 60. The forward end of the leaf spring 60 is secured to the strap-like element 32 and the rear end thereof resiliently urges the fin 48 towards an extended position as shown in FIGURE 4. Secured to the portion of the bracing element 32 underlying the rear wall 36 is another leaf spring 62 whose upper end is secured to the bracing element 32 and whose lower end resiliently urges the pivot pin 50 forwardly in the slots 36.

Thus, it may be seen that in operation the water ski fin 48 is normally urged into an extended position by means of spring 60 and that the rearward and upward force of the ski striking an object would cause the slide pin 56 to move rearwardly through the forwardly curving portion 44 of the slots 38 and upwardly through the inclined portion 40 of the slots 38. Thus, the fin 48 when contacting an underwater object will automatically be retracted against the force of spring 60 within the housing 16. After the underwater object or ski jump has been passed the spring 60 will again urge the fin 48 to an extended position.

The fin 48 may also be retracted manually by a skier while he is skiing by manipulating the slide pin 56 and passing it upwardly through the slots 38 and then rearwardly and downwardly into the downwardly curving portion 46 of the slots 38 to retain the fin 48 in a retracted position. It is to be understood that the slide pin 56 may be conveniently provided, on its opposite end portions which extend beyond the side walls 18, with suitable enlargements (not shown) to adapt the slide pin 56 to be more readily manipulated by a water skier.

The leaf spring 62 is of sufficient strength to ensure that the fin 48 will not be moved rearwardly when in the retracted position so as to position the slide pin 56 in the downwardly curving portion 46 of the slot 38 and thereby retain the fin accidentally in the retracted position. Further, it is to be understood that the fin 48, although not necessarily being entirely received within the housing 16,

is retracted a sufficient amount to position its lower surface above the lower surface of the ski 10.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. 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, a panel-like vertically disposed and longitudinally extending fin, means pivotally securing the forward portion of said fin to 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 lower surface of said ski, and means resiliently urging said fin toward an extended position.

2. The combination of claim 1 wherein said housing includes a pair of spaced upstanding side walls interconnected at their upper edges by a top wall, a pair of aligned slots formed in said side walls, said slots each being formed in one of said side walls and including an upwardly extending forwardly inclined mid-portion terminating in a rearwardly curving portion at its upper end and a forwardly curving portion at its lower end, said fin having a transversely extending slide pin secured thereto whose opposite ends are slidably received in said slots, said pivotally securing means including a pin and slot connection.

3. The combination of claim 2 wherein said rearwardly curving portion terminates in a downwardly curving portion.

4. The combination of claim 3 including means resiliently urging said fin forwardly in said housing.

5. The combination of claim 1 including means for selectively retaining said fin in a retracted position.

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