March 26, 1963 C. L. ESTES 3,082,444

WATER SKI SAFETY SKAG

Filed Dec. 15, 1961

FIG. 1.

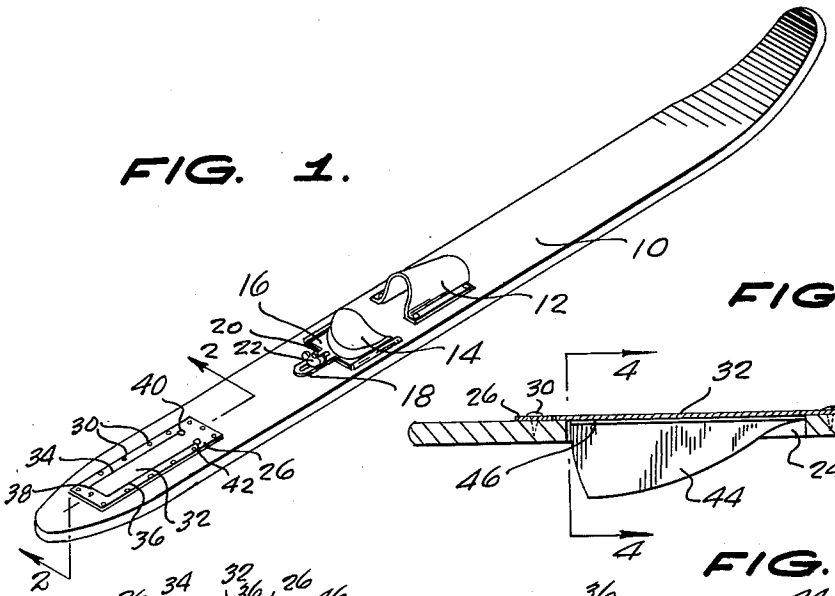
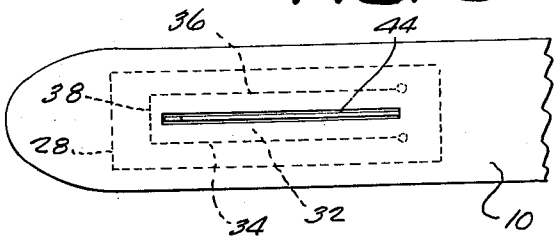


FIG. 2.

FIG. 3.



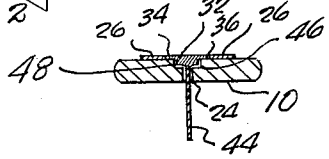


FIG. 4.

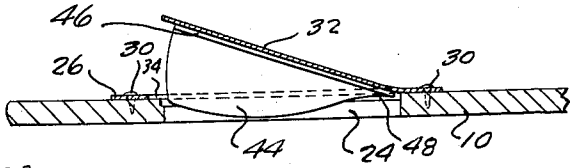


FIG. 5.

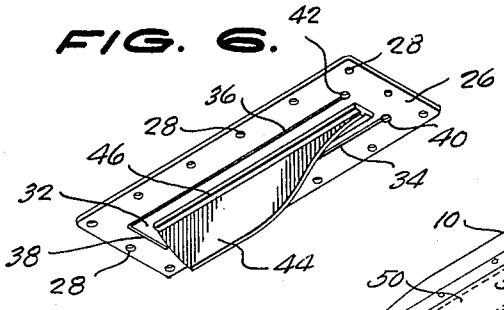


FIG. 6.

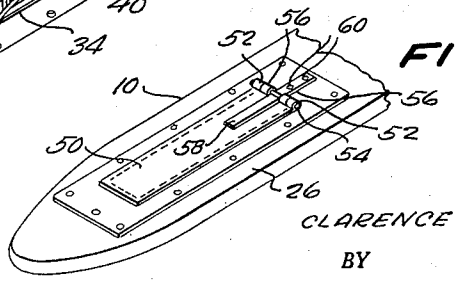


FIG. 7.

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WATER SKI SAFETY SKAG

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This invention relates to water skis, and in particular to the skag (or skeg), a keel element located on the underside of a ski, near the rear end thereof. While the skag serves an important hydrodynamic function, it is necessarily of delicate construction, and is quite vulnerable to damage due to encounters with underwater obstructions and floating debris. In fact, its strength is frequently taxed by engagement with ramps in several variations in the sport. Furthermore, in such abnormal situations, the hazard may extend to the skier himself, or to other persons.

It is therefore a general object of the invention to provide a protective arrangement for skags in water skis. More particularly, it is an object to provide a skag which is yieldable on contact with solid objects so as to be automatically movable out of the path of impact. A further object is to provide a skag as aforesaid, which is adaptable to existing skis.

These and other ends, which will be apparent, are attained by the present invention, a preferred form of which is described in the following specification, as illustrated in the drawing, in which:

FIGURE 1 is a perspective view of a ski employing the novel skag,

FIGURE 2 is a sectional view in a vertical plane through the skag unit, taken on the line 2—2 of FIGURE 1,

FIGURE 3 is a bottom plan view of the portion of the ski shown in FIGURE 2,

FIGURE 4 is a sectional view taken on the line 4—4 of FIGURE 2,

FIGURE 5 is a view similar to FIGURE 2, showing the skag blade in an adjusted position,

FIGURE 6 is a perspective view of the skag unit, as seen from the under side, and

FIGURE 7 is a perspective view of a modified skag unit.

Referring to the drawings by characters of reference, there is shown a ski 10, with a toe-piece 12, and a heel-piece 14, the latter mounted on a plate 16 having a slotted tongue 18 engaging a screw 20, and secured in adjusted positions by a wing nut 22. The parts thus far enumerated are conventional, and form no part of the present invention.

Near its rear end, the ski 10 has a relatively narrow, longitudinally extending, through slot 24 for accommodation of the skag blade, as will be described. The skag unit, best seen in FIGURE 6, comprises a rectangular mounting plate 26, with a series of marginal perforations 28, which receive attaching screws 30. The plate 26, which is of spring steel, bronze or other suitable material, has a central, rectangular flap or tongue 32, formed by slotting the plate along two parallel lines 34, 36, and a transverse, end line 38, the tongue being swingable, by flexure, out of the plane of the plate 26. In order to avoid critical stresses in the plate at the "hinge" ends of slots 34, 36, which would lead to fatigue and failure, the slots at the said ends are bored to provide circular ends 40, 42.

The skag blade 44 has a straight, upper edge, fixed to a face of a flat bar 46, which in turn is attached to the under surface of the flexible flap 32. To accommodate the bar 46, the blade slot 24 in the ski is widened, at the top of the ski, to provide a channel 48. The lower edge of skag blade 44 is curved, and the depth of the blade

gradually diminishes from rear to front, from a maximum value to zero. This is not only consonant with proper hydrodynamic action, but is also adapted for camming the blade out of action position.

The operation will be obvious. With the skag plate 26 screwed in place on the top surface of the ski, the blade 44 extends downward through the slot 24 in the ski, and below the ski to a sufficient amount to cleave the water and provide the usual skag function. During normal operation, the tongue 32 remains unflexed, in the plane of the plate 26, since the only appreciable forces encountered are broadside on the blade 44. However, when a solid obstruction, such as a submerged log, is encountered by the blade, the blade is cammed upward by its tapered lower edge, swinging about its attached end, against the natural spring of the plate material. With the blade swung to a position completely above the lower surface of the ski, as shown in FIGURE 5, only the flat bottom of the ski remains exposed, and this is capable of gliding over the obstruction. Thus, damage to the skag blade, and shock to the skier are both avoided. After passing over the obstacle, the blade automatically returns to working position.

In FIGURE 7 is shown a form in which the flap is separate, being attached by means of a hinge. The flap 50, in this case, carries a pair of hinge sleeves 52, accommodating a hinge pin 54, which is also mounted in a pair of sleeves 56, carried by the plate 26. The flap is biased to closed position by means of a leaf spring 58, secured to the plate 26 by rivets 60.

Generally speaking, while preferred embodiments have been shown and described, various modifications will be apparent, in the light of this disclosure, and the invention should not, therefore, be deemed as limited, except insofar as shall appear from the spirit and scope of the appended claims.

I claim:

1. A water ski having a longitudinally disposed, through slot near its rear end, a rectangular plate of spring material secured to said ski in covering relation to said slot, a flap located centrally of said plate, in covering relation to said slot, and defined by three communicating slits, parallel, respectively, to two sides and one end of said plate, said flap being swingable, under flexure, out of the plane of said plate, about a line between the terminal ends of the slits parallel to said two sides of the plate, said ski having a channel in its upper surface wider than said slot, and communicating therewith, a bar carried on the under side of said flap and received in said channel, and a skag blade depending vertically from said bar, and extending through said slot and below the ski, said blade having a curved, lower edge extending from a maximum blade depth at the rear, to a zero depth forwardly of the blade.

2. A water ski having a longitudinally disposed through slot near its rear end, a rectangular plate of spring material secured to said ski in covering relation to said slot, a flap located centrally of said plate, in covering relation to said slot, and defined by three communicating slits, parallel, respectively, to two sides and one end of said plate, said flap being swingable, under flexure, out of the plane of said plate, about a line between the terminal ends of the slits parallel to said two sides of the plate, said ski having a channel in its upper surface wider than said slot, and communicating therewith, a bar carried on the under side of said flap and received in said channel, and a skag blade depending vertically from said bar, and extending through said slot and below the ski, said blade having a curved, lower edge of diminishing depth in a direction from rear to front of the blade.

3. A water ski having a longitudinally disposed through

slot near its rear end, a rectangular plate of spring material secured to said ski in covering relation to said slot, a flap located centrally of said plate, in covering relation to said slot, and defined by three communicating slits, parallel, respectively, to two sides and one end of said plate, said flap being swingable, under flexure, out of the plane of said plate, about a line between the terminal ends of the slits parallel to said two sides of the plate, and a skag blade depending vertically from said flap, and extending through said slot and below the ski, said blade having a curved, lower edge of diminishing depth in a direction from rear to front of the blade.

4. A water ski having a longitudinally disposed through slot near its rear end, a plate of spring material secured to said ski in covering relation to said slot, and having slits defining an integral flap, located in covering relation to said slot, and swingable, under flexure, out of the plane of said plate, about a line between the terminal ends of said slits, and a skag blade depending perpendicularly from said flap, and extending through said slot and below the ski, said blade having a lower edge of gradually diminishing depth in a direction from rear to front of the blade.

5. For use with a water ski provided with a longitudinally disposed slot near its rear end, a rectangular plate of spring material adapted to be secured to said ski in covering relation to the slot, a flap located centrally of said plate, and defined by three communicating slits, parallel, respectively, to two sides and one end of said plate, said flap being swingable, under flexure, out of the plane of said plate, about a line between the terminal ends of the slits parallel to said two sides of the plate, a bar carried on the under side of said flap, and a skag blade extending perpendicularly from said bar and adapted to extend through and beyond the slot in the ski, said blade having an outer edge arranged in converging relation to said bar.

6. For use with a water ski provided with a longitudinally disposed slot near its rear end, a rectangular plate of spring material adapted to be secured to said ski in covering relation to the slot, a flap located centrally of said plate, and defined by three communicating slits, parallel, respectively, to two sides and one end of said plate, said flap being swingable, under flexure, out of the plane of said plate, about a line between the terminal ends of the slits parallel to said two sides of the plate, and a skag blade of tapering depth extending perpendicularly from said flap and adapted to extend through and beyond the slot in the ski.

7. For use with a water ski or the like, including upper and lower sides, and having a slot formed therein, a skag unit comprising:

(*a*) a plate secured to the upper side of the ski about the slot;

(*b*) the plate having an opening formed therein positioned over the slot;

(*c*) a flap carried by the plate in the opening and secured to the plate at one location;

(*d*) the flap being arranged over the slot;

(*e*) the flap being pivotally secured to the plate and being arranged for swinging movement with respect to the plate against a spring bias; and

(*f*) a skag blade secured to the flap and extending through said slot below the lower side of the ski.

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