July 30, 1963 T. G. MERKLEY ETAL 3,099,025

WATER SKI

Filed March 29, 1963

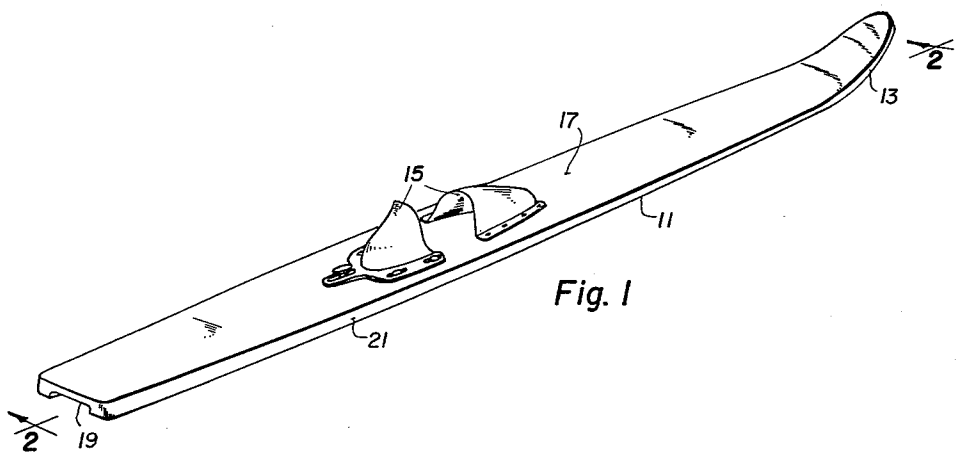


Fig. 1

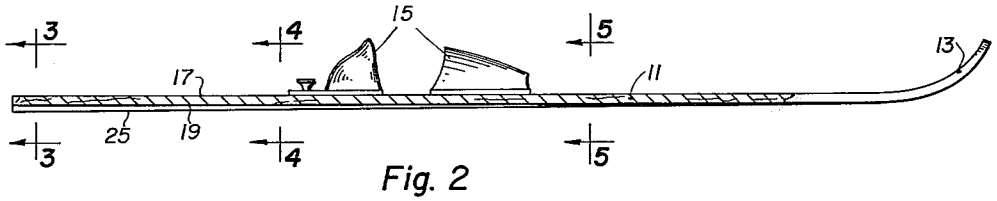


Fig. 2

Fig. 3

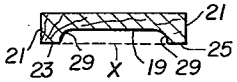


Fig. 4

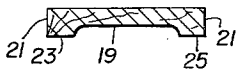


Fig. 5

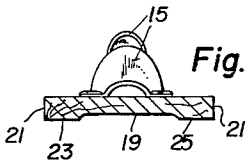
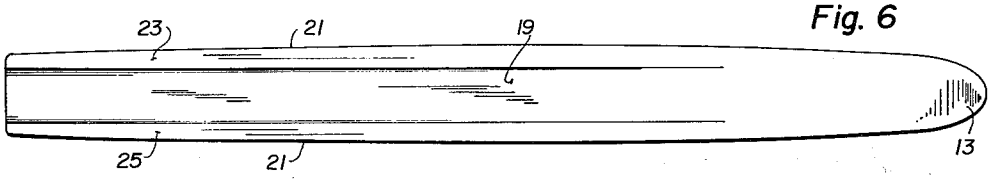


Fig. 6



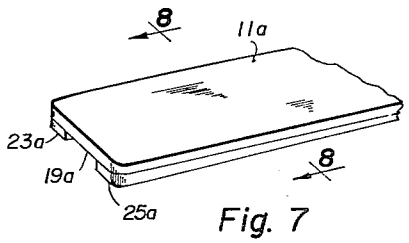


Fig. 7

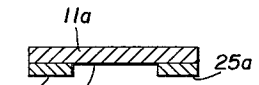


Fig. 8

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WATER SKI

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This invention relates to water skis and contains the subject matter of our prior copending application entitled "Water Ski," Serial No. 146,503, filed October 20, 1961, now abandoned, and is a continuation-in-part thereof.

There has been a constant demand to improve the riding and control qualities of water skis. In attempting to make improvements, it was natural at first to look to the snow ski art. However, it was soon apparent that the characteristics of the surfaces on which water skis and snow skis are used are so different that reference to the snow ski art yielded little success and much more failure. In fact, recently water skis with longitudinally convex undersurfaces have been introduced and have given better riding and control qualities than flat bottom skis, and yet snow skis with convex bottom surfaces are entirely unworkable. This merely points up the nonanalogousness of the water and snow ski arts.

We have discovered that even better riding and control qualities can be obtained by providing a water ski having an essentially longitudinally concave bottom surface, and it is a main object of the invention to provide such a water ski.

In providing such a concave undersurface, we have discovered that not any undersurface that might be called concave will work, but that the improved handling characteristics can be obtained only if the concavity is laterally pronounced. Yet, we have found that concaveness alone is not sufficient, and, in fact, we have found that it is necessary to provide generally flat land areas which face downwardly in a direction generally normal to the plane of the ski member and which are generally parallel to the main plane of the ski member and each of which, for the major portion of its length being of lesser lateral dimension than the depressed area, is still of substantial dimension. In fact, we have discovered that a preferable concave undersurface can be obtained by providing an essentially flat ski member with an essentially flat undersurface parallel to the main plane of the ski member and forming a wide shallow central depression or groove lengthwise of such undersurface of a width less than that of said undersurface to leave narrow strip-like land portions which are parallel to the main plane of the ski member.

It is an object of the invention to provide such a ski, and also to provide such a ski of similar formation wherein the land portions and wide shallow groove are provided by affixing narrow strips to the undersurface of a ski member.

Various other objects of the invention will be apparent from the following description taken in connection with the accompanying drawings wherein:

FIG. 1 is a perspective view of a water ski of the invention;

FIG. 2 is a longitudinal midsectional view taken along line 2—2 of FIG. 1;

FIGS. 3, 4 and 5 are transverse vertical sections taken respectively along lines 3—3, 4—4 and 5—5 of FIG. 2;

FIG. 6 is a view of the undersurface of the ski;

FIG. 7 is a fragmentary perspective view of a modified form of the invention; and

FIG. 8 is a transverse vertical section taken along line 8—8 of FIG. 7.

Referring to FIGS. 1 and 2, the water ski shown comprises an elongate ski member 11 which is generally flat

in cross section and which is formed of wood, although it might be formed of other material. The ski member has a width a plurality of times greater than its thickness and has an upwardly turned front end 13 as is conventional practice. The ski may have essentially parallel side edges or may be "banana" shaped with a wider midportion than end portions.

The two part foot retaining unit 15 is provided on the upper surface 17 of the ski member and located intermediate the ends thereof and generally medially of the ski member.

The ski member has an undersurface of concave transverse cross section defined by a wide shallow recess 19 (FIGS. 1 and 2), extending longitudinally of the underside of the ski member from the rear end thereof, through which it opens as shown in FIG. 2, forwardly past the longitudinal mid-point of the ski member as shown in FIG. 2. The recess 19 extends at least one-third of the distance to the front end of the member 11. Also, as shown in FIG. 2, preferably, the groove is of maximum depth at its rear or left-hand end and progressively gets shallower as it advances toward the front end of the ski. In any event, it is important that the groove depth at any selected point be no greater than any point rearwardly thereof.

For at least the major portion of its length said groove 19 at any cross section is a plurality of times wider than it is deep, and while the groove is wide, it does terminate short of the side edges 21 (FIG. 3) of the ski member to leave downwardly facing parallel land portions 23 and 25. There is a decided change in surface contour at the edges between the land portions and the groove. The groove is symmetrically disposed relative to the center line of the ski member so that the land portions are of equal width at any transverse section along the ski member.

For at least a major portion of its length, said groove 19 at any point is wider than a land portion. In fact, the groove 19 at selected points preferably has a width greater than the combined widths of the land portions 23 and 25.

It is apparent that the groove of the ski member is defined in part by a flat bottom surface of a width which constitutes at least a major portion of the width of the groove. FIG. 2 shows that the groove is generally parallel to but slightly obliquely related in a longitudinal direction to the land portions. It is further pointed out that at least for a major portion of the length of the groove, the combined widths of the land portions are such as to leave a groove of a width equal to at least a major portion of one-half of the width of the member. Also, such combined widths are equal to at least a major portion of one-half of the width of the groove. Therefore, the land portions are generally flat substantial land portions for riding on the surface of a body of water. Also, the groove is a substantial groove to lend stability to the ski. It is further pointed out that for at least the major portion of its length, the groove is of substantial width with no greater than a gradual width variation, with the groove at any place along such major portion being less than twice as wide as at any other place. In other words, in FIG. 6, the rearward portion of the groove is certainly less than twice as wide as the forward portion of the groove. Also, for at least the major portion of the length of said groove, the grooving width is a plurality of times greater than the grooving depth. It is further apparent that the depth of the groove is less than half the thickness of the ski member.

A preferred way of manufacturing a ski of the invention is to provide a wooden ski member having a flat undersurface (X in FIG. 3) parallel to the plane of the ski member and milling a wide shallow groove down the length of the ski member to a place past the longitudinal

mid-point of the ski member. If the groove is of tapered depth as shown in FIGS. 2–5, and the groove has curved corner portions **29** as shown in FIGS. 3–5, the width of the groove will decrease as the groove depth decreases so that the groove width will approach the combined widths of the land portions **23** and **25**.

Referring to FIGS. 7 and 8, the wide shallow groove **19***a* may be provided by affixing to the underside of a ski member **11***a* a pair of strips **23***a* and **25***a*. These strips taper in thickness toward the front end of the ski if a groove of tapered depth is to be provided and terminate short of the front end of the ski.

The present invention also contemplates that the strips **23***a* and **25***a* may have curved inner faces so as to provide a groove having a cross sectional contour like the groove in the previously described form of the invention. If desired, the strips **23***a* and **25***a* could be made of different material from that of the underside of the ski member **11***a*.

In use, the ski of the invention shows remarkable stability, without, however, exhibiting any loss of handling and control characteristics, and in fact, having superior characteristics of this type as compared to previous water skis.

Having described the invention in what is considered to be the preferred embodiment thereof, it is desired that it be understood that the invention is not to be limited other than by the provisions of the following claims.

We claim:

1. A water ski comprising:
an elongate ski member which is essentially flat in cross section and has a width a plurality of times greater than its thickness,
said member having a front end and a rear end and a topside to support a person,
the underside of said member being defined by two downwardly facing longitudinally extending marginal land portions flanking a central groove,
said land portions being generally flat for riding on the surface of a body of water,
said land portions facing downwardly in a direction generally normal to the plane of said ski member,
there being a decided change in surface contour at the inner edge of each land portion marking the end of each land portion and the beginning of said groove,
said groove extending from the rear portion of said member forwardly to a point at least one-third of the distance to the front end of said member,
said groove being symmetrically disposed relative to the longitudinal center line of said member,
said groove being defined in part by a bottom surface of a width which constitutes at least a major portion of the width of said groove,
said bottom surface being generally parallel to said land portions,
for the major portion of its length, said groove being of substantial width with no greater than a gradual width variation, and with said groove at any place along such major portion being less than twice as wide as at any other place,
for at least the major portion of the length of said groove, the combined widths of said land portions being such as to leave a groove having a width equal to at least a major portion of one-half the width of said member, and such combined widths being equal

to at least a major portion of one-half the width of said groove,
for at least a major portion of the length of said groove, the grooving width being a plurality of times greater than the grooving depth,
the latter being less than half the thickness of said member,
the grooving depth at any selected point being no greater than any point rearwardly thereof.

2. A water ski comprising:
an elongate ski member which is essentially flat in cross section and has a width a plurality of times greater than its thickness,
said member having a front end and a rear end and a topside to support a person,
the underside of said member being defined by two downwardly facing, longitudinally extending, marginal land portions flanking a central groove,
said land portions being generally flat for riding on the surface of a body of water,
said land portions facing downwardly in a direction generally normal to the plane of said ski member,
there being a decided change in surface contour at the inner edge of each land portion marking the end of each land portion and the beginning of said groove,
said groove extending from the rear portion of said member forwardly to a point at least one-third of the distance to the front end of said member,
said groove being symmetrically disposed relative to the longitudinal center line of said member,
said groove being defined in part by a flat bottom surface of a width which constitutes at least a major portion of the width of said groove,
said flat bottom surface being generally parallel to but slightly obliquely related in a longitudinal direction to said land portions,
for the major portion of its length said groove being of substantial width with no greater than a gradual width variation, and with said groove at any place along such major portion being less than twice as wide as at any other place,
for at least the major portion of the length of said groove the combined widths of said land portions being such as to leave a groove having a width equal to at least a major portion of one-half the width of said member, and such combined widths being equal to at least a major portion of one-half the width of said groove,
for at least the major portion of the length of said groove the grooving width being a plurality of times greater than the grooving depth,
the latter being less than half the thickness of said member,
the grooving depth of any selected point being no greater than any point rearwardly thereof.

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