March 16, 1965 M. G. AMSBRY 3,173,161

CONCAVE WATER SKI

Filed Sept. 10, 1963 2 Sheets-Sheet 1

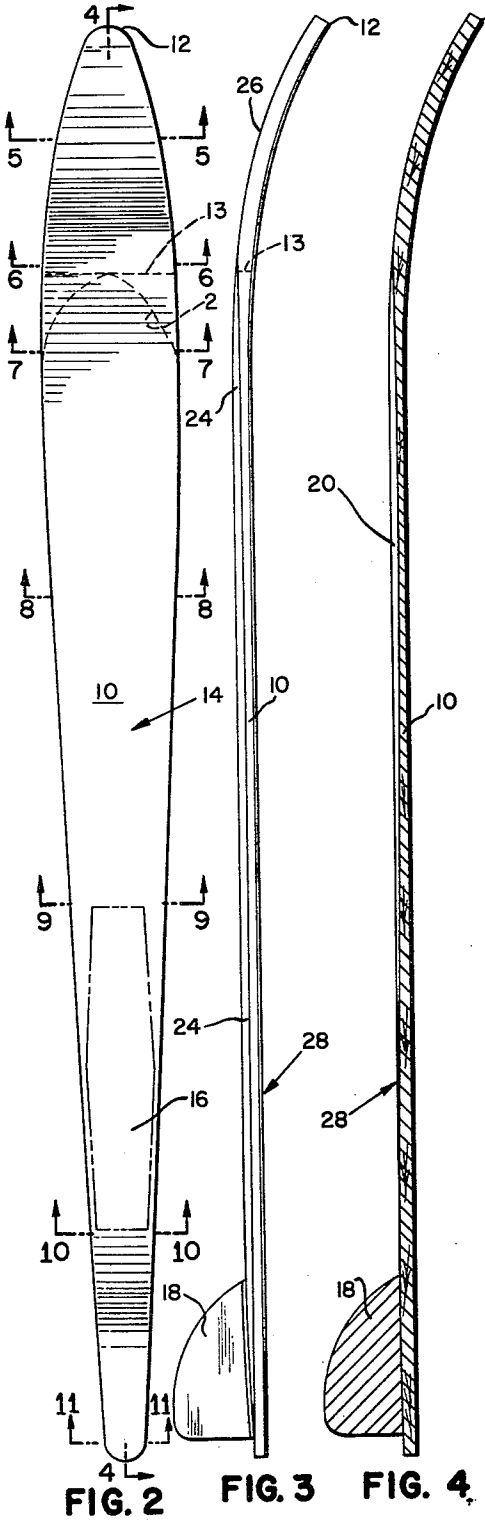


FIG. 2

FIG. 3

FIG. 4

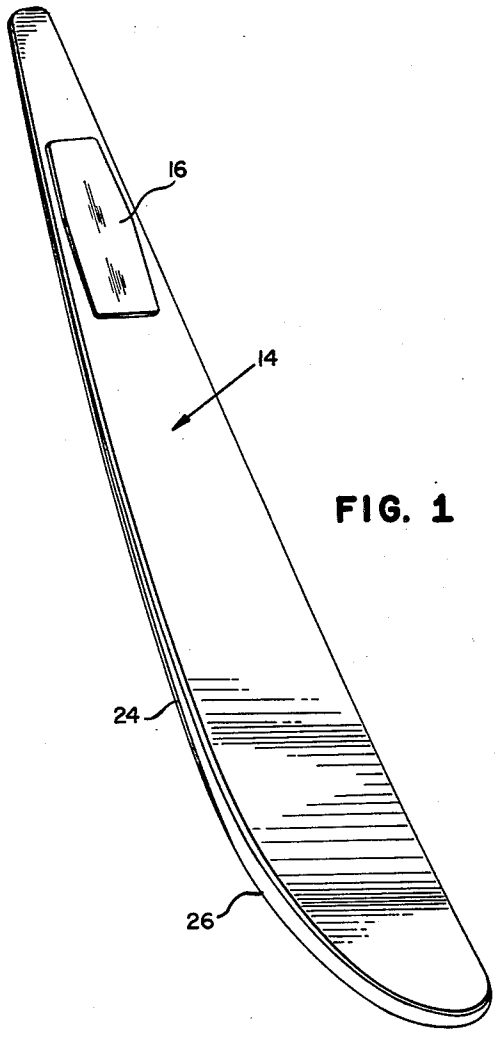


FIG. 1

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CONCAVE WATER SKI

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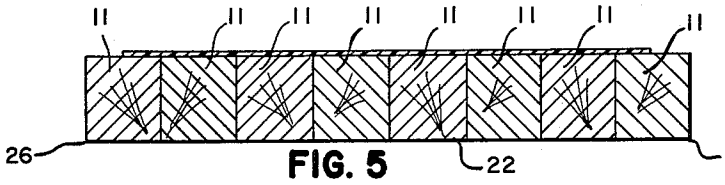


FIG. 5

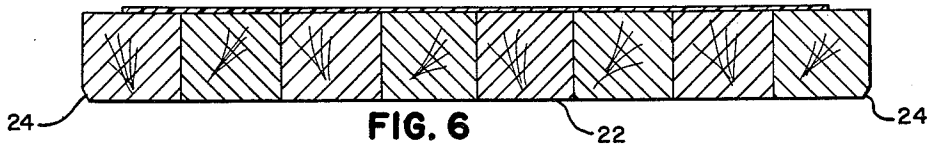


FIG. 6

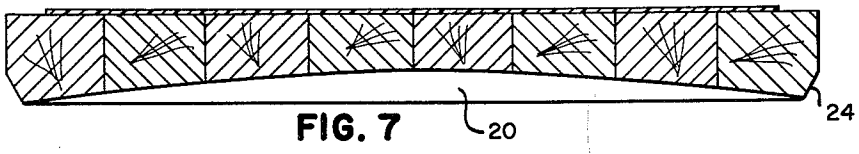


FIG. 7

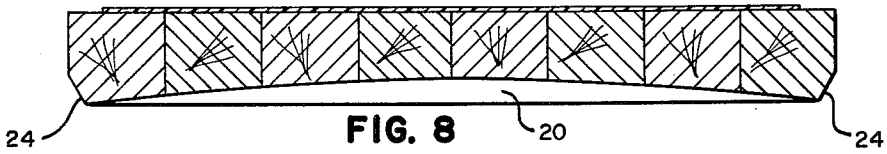


FIG. 8

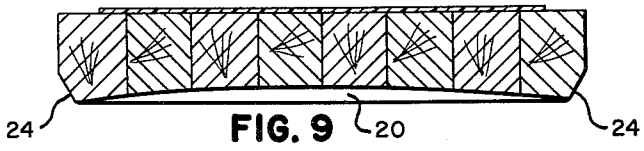


FIG. 9

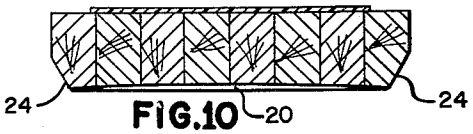


FIG. 10

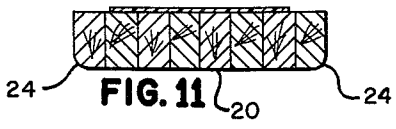


FIG. 11

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3,173,161

CONCAVE WATER SKI

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Filed Sept. 10, 1963, Ser. No. 308,021
3 Claims. (Cl. 9—310)

This invention relates to water skis and more particularly to a new slalom ski for water skiing.

In the sport of water skiing, the skills of the skier find their greatest test in competitive slalom skiing where the skier must exercise substantially perfect balance and control. Success in competitive slalom skiing is dependent first and foremost on the development of these skills, but substantial benefit can be obtained from the use of a properly designed slalom ski.

In the course of a substantial amount of competitive water skiing in recent years, I have developed a slalom ski which appears to have the best physical characteristics of the ski for providing the skier with maximum stability of the ski and maximum control in the sense of providing a ski which responds very rapidly to actions of the skier in attempting to change direction. This design is the combination of several years of testing of a number of different prototypes and the ski of this design appears to me to offer better stability and control than any other of the prototypes or any of the various skis which are available commercially.

The design of this ski is illustrated in the attached drawings which are to scale, in which:

FIG. 1 is a perspective view of the ski;

FIG. 2 is a plan view on a larger scale;

FIG. 3 is a view in side elevation of the ski;

FIG. 4 is a view in longitudinal section of the ski, and

FIGS. 5–11 are cross sectional views of the ski taken along the planes indicated at the corresponding positions in FIG. 2.

The most important features of the ski are its profile, that is its shape seen in FIG. 2, its concave bottom, and its laminated structure which give to the ski somewhat more than moderate flexibility while providing substantial strength in the ski in all areas of the ski regardless of concavity.

Referring now in detail to the drawings, the ski has an elongated body **10** which consists essentially of eight elongated laminations **11** of a hardwood such as Ash which are bonded together in side by side relation by a conventional water resistant cement. The ski has an upturned forward tip portion **12** and an elongated running portion which joins the tip portion at an imaginary transverse line **13**, a top surface having a ski boot support area **14** on which may be mounted a conventional binding for receiving the skier's foot, a rearward step area **16** and a tail fin **18**. The step area **16** is defined by a cork pad, and any suitable auxiliary binding may be provided on the step area if desired.

The lower surface of the ski is provided with an elongated concave surface **20** which extends from the transverse line **13** to the rearward end of the ski, with the bottom surface **22** forward of the transverse line **13** being generally flat. The concave running surface **20** is bounded by curved edges **24**, and the forward flat surface portion **22** is bounded by sharp edges **26**.

The running portion of the ski, that is below the transverse line **13** in FIG. 2 is generally straight from the transverse line **13** to approximately the mid-point of the step area **16** as indicated at **28** in FIGS. 3 and 4, and the rearward portion of the ski below the arrows **28** in FIGS. 3 and 4 is bent upwardly through an angle of between one and five degrees toward the same side of the straight running portion as the upcurved tip **12**. This small inclination at the rear of the ski provides an effective rocker by which the planing angle of the ski in the water may be controlled very effectively with shifting of the skier's weight.

The concave surface **20** on a ski of the profile illustrated in the drawing provides the best design I have yet tested for imparting to the ski the best characteristics of stability and control. The concave surface should have a radius of curvature substantially constant along the length of the ski and between about two and five times the maximum width of the ski. In this regard, the ski illustrated in the drawing has a length of approximately 67 inches, a maximum width located between the planes of FIGS. 8 and 7 of about 6.5 inches, a maximum thickness of $11/16$ of an inch, and approximately a 15 inch radius of curvature for the concave surface **20**. The radius of curvature of the curved edges **24** is approximately $2/10$ of an inch, and the angle change of the running portion of the ski at **28** is approximately two degrees. The ski having these dimensions has been found to provide best performance.

The ski is moderately flexible, and the side by side arrangement of laminae **11** provides excellent control of this flexibility and strength in the ski where the thicknesses of the laminae change in the area of the concave surface **20**.

In some instances, it may be desirable to provide a somewhat modified shape on the tail end of the ski since some skiers prefer a flared fish tail profile, but I have found that the converging profile illustrated in the drawing is most satisfactory for most skiing conditions. It may also be desirable in some situations to provide the ski with an exterior coating of polyester resin impregnated in glass fibers either to control the flexibility of the ski or strengthen its surface against wear, but generally speaking I prefer not to employ such a covering. In the ski illustrated in the drawing, there is however provided an epoxy coating on the top of the ski which because of its thickness does not show on the drawings, this coating being provided for wear and decorative purposes.

While one specific embodiment of the invention has been illustrated and described herein, this is but the best way I contemplate of carrying out the invention, and certain modifications in the ski design may be made without departing from the spirit and scope of the invention.

I claim:

1. A slalom water ski comprising an elongated ski body having a rearward end, an elongated running portion, and a forward upcurved tip portion integrally formed with said running portion and joining said running portion along a line extending transversely of said body, said body having a lower water engaging surface and an upper support surface defining the plan profile of said body with said body consisting essentially of a plurality of laminae of hardwood extending along the length of the body and positioned in side by side relation to each other and imparting to said body substantial longitudinal flexibility, a ski boot support area on said upper support surface positioned at approximately the mid-point of the length of said running portion, and a step area on the upper support surface between said ski boot support area and said rearward end, said plan profile being smoothly tapered throughout the length of said body with its area of maximum width located between said ski boot support area and said transverse line and with said profile decreasing in width continuously from said area of maximum width to a position between said step area and said rearward end, the transverse cross section of said lower water engaging surface having a flat shape forward of said transverse line and a concave shape extending substantially the full width of said running portion to the

rear of said transverse line where the radius of curvature of said concave shape is substantially constant along the entire length of said running portion and is between about two and five times the maximum width of said body.

2. A water ski according to claim 1 wherein said lower water engaging surface is defined by the lower surfaces of said laminae.

3. A slalom water ski comprising an elongated ski body having a length of about 67 inches, a thickness of about 5/8 of an inch, an elongated running portion about 55 inches long and a forward upcurved tip portion about 12 inches long integrally formed with said running portion and joining said running portion along a line extending transversely of said body, said body having a lower water engaging surface and an upper flat support surface defining the plan profile of said body, a ski boot support area on said upper support surface positioned at approximately the mid-point of the length of said running portion, and a step area on said upper support surface on the side of said ski boot support area opposite to said tip portion, said plan profile being smoothly tapered throughout the length of said body with its area

of maximum width of about 6.5 inches located about midway between said ski boot support area and said transverse line, and with said profile decreasing in width continuously from said area of maximum width to a width of about 2½ inches adjacent to the end of said ski remote from said tip portion, and the transverse cross sections of said lower water engaging surface having a flat shape with sharp edges forward of said transverse line and a concave shape extending the full width of the ski with rounded edges to the rear of said transverse line where the radius of curvature of said concave shape is substantially constant at about 15 inches along the entire length of said running portion and where the radius of curvature of said rounded edges is substantially constant at about 0.2 inches along the length of said running portion.

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