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Doyle et al.

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[54] **SINGLE SNOW SKI**

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[52] **U.S. Cl.** ..... **280/11.13 S,** 9/310 A

[51] **Int. Cl.** **A63c 5/00**

[58] **Field of Search** ..... 280/11.13 S, 11.13 L, 280/11.13 R, 11.13 A, 11.13 F, 11.13 W, 18, 19, 12 H; 9/310 A, 310 B

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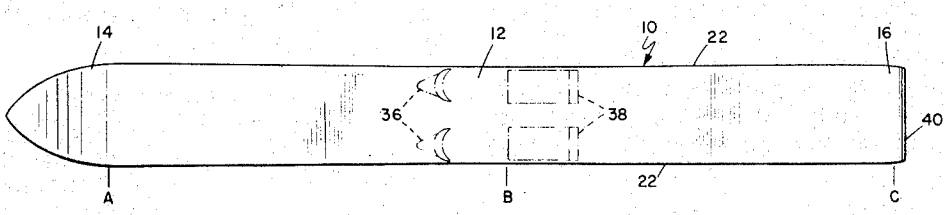
[57] **ABSTRACT**

A snow ski of sufficient width to hold both feet in close side by side position in conventional bindings or boot retainers. The ski has a stiff central body portion, with a flexible tail and an even more flexible nose or tip, and a minimum bottom camber. The relationship of the stiffness and flexibility is important to the performance of the ski. Advantages of the snow ski are extreme maneuverability, good pivot turn ability, controlled turns at all speeds and good support on powder snow due to the large surface area.

6 Claims, 4 Drawing Figures



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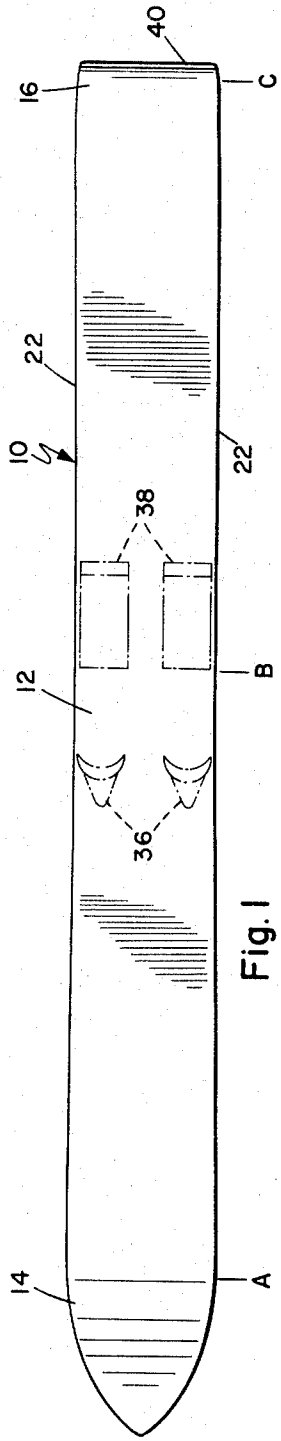

Fig. 1

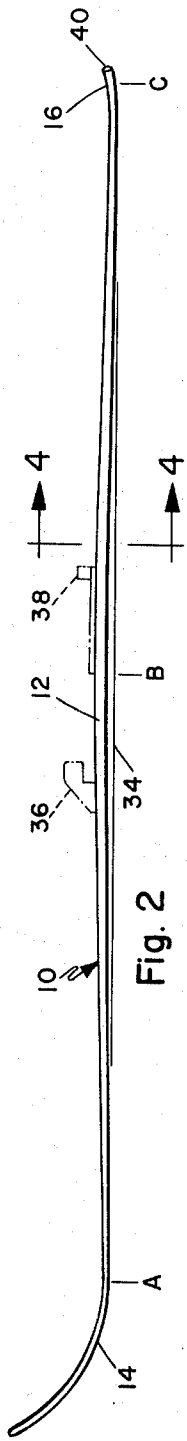

Fig. 2

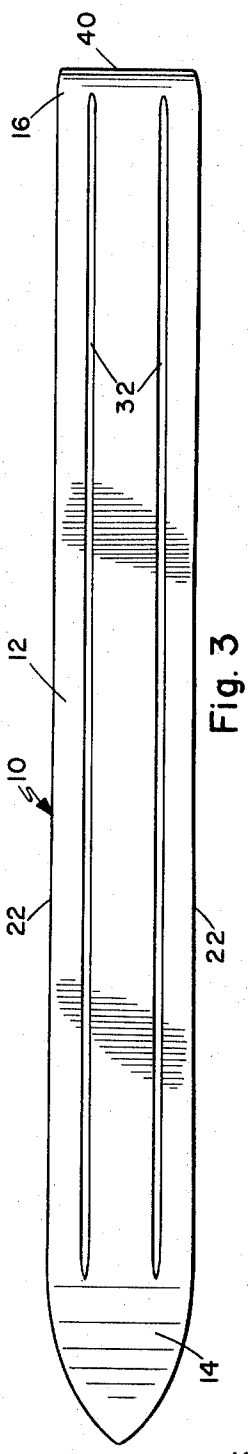

Fig. 3

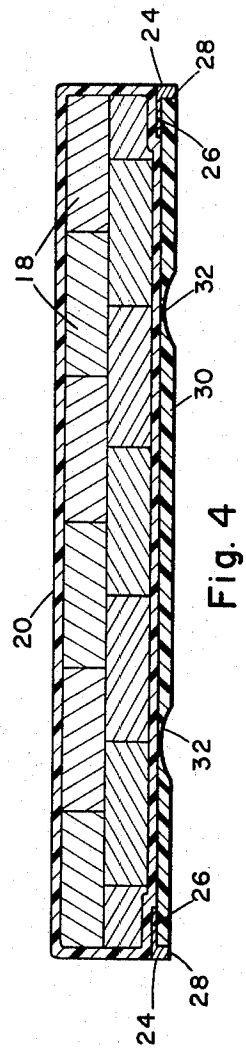

Fig. 4

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SINGLE SNOW SKI

BACKGROUND OF THE INVENTION

In the conventional technique of skiing with two skis, properly controlled turns and other maneuvers require considerable skill and coordination. Much body motion is used in maneuvering the body weight being shifted for initiating and maintaining directional control. With conventional skis which are very long and narrow, one ski may sink deeper into the snow than the other, making balanced control difficult. In soft or powder snow, the narrow skis tend to sink in and run well below the surface, so that sharp turns are not possible. To make a typical turn the skis must be unweighted by shifting the body weight back, the skier moving toward a sitting position and leaning forward from the waist to maintain balance. The upper body is twisted in the direction of the turn and the action through the legs bank the skis to carve into the snow in the turn with the outside ski acting as a rudder. If one ski digs into the snow or slips, a fall results. With the two skis usually going in different directions in a fall, the skier has very little control and injury is common.

SUMMARY OF THE INVENTION

The single ski described herein is much wider and shorter than conventional skis and, due to its large concentrated area, rides well on soft snow. Both feet are held in close side by side position in any suitable type of bindings or boot retainers, the constant secure leg position making control more positive. Tests have shown that fast turns can be made at any speed with a minimum of effort and body motion, and sharp pivot turns are possible as opposed to the usually long sliding turns made with dual skis. In a fall, the feet remain together and the skier can retain more control over the body and limbs to avoid injury.

The performance of the single ski is not merely the result of the short wide shape. The pattern of flexibility through the ski is important and there is a definite configuration that is necessary to ensure proper action. In the ideal ski, the central body portion is very stiff, the tail is torsionally flexible and the nose or tip is even more flexible. Very little bottom camber is used and the ski does not need the pronounced hourglass shape used in most conventional skis to allow a tight radius turn. The single ski has almost straight sides for high speed stability, yet is capable of sharp turns due to its novel design.

Conventional skis have a length to width ratio on the order of 24 to 1 and have low torsional resistance. In contrast the single ski has a length to width ratio on the order of 9 or 10 to 1 and the torsional resistance is important. In a turn the tail of the ski acts as a rudder and must bite into the snow without twisting away from the turn. The nose or tip must have enough torsional resistance to hold a traverse across a slope, but still be able to twist and release from the snow from a turn. A tip that is torsionally too stiff will tend to climb or hook into a slope and, if too soft, will twist away from the surface and not hold a traverse. It has been found in tests that a ski which is too stiff overall, and one which is too flexible, do not have the performance of the properly proportioned ski described herein.

The primary object of this invention is to provide a new and improved single snow ski.

Another object of the invention is to provide a new and improved single snow ski on which both feet are held in close side by side relation.

Another object of this invention is to provide a new and improved single snow ski with a wide body, having a stiff central portion and flexible tip and tail portions in a particular relationship of flexibility for optimum performance.

A further object of this invention is to provide a new and improved single snow ski which is more easily controlled and safer to use than conventional dual skis.

Other objects and many advantages of this invention will become more apparent upon a reading of the following detailed description and an examination of the drawing, wherein like reference numerals designate like parts throughout and in which:

FIG. **1** is a top plan view of the ski.

FIG. **2** is a side elevation view thereof.

FIG. **3** is a bottom plan view thereof.

FIG. **4** is an enlarged sectional view taken on line **4—4** of FIG. **2.**

DESCRIPTION OF THE PREFERRED EMBODIMENT

The ski comprises an elongated body **10** with a central portion **12,** and an upwardly curved nose or tip **14** and a tail **16.** The ski is preferably constructed from longitudinal laminated strips **18,** of wood or the like, enclosed in a skin **20** of fiberglass reinforced plastic. Along each side edge **22** is a reinforcing angle **24,** having a flange **26** secured in any suitable manner to the underside of body **10,** and a downwardly extending rib **28** which provides the wear resistant edge of the ski. Between the ribs **28,** the underside of the ski has a running surface **30** of polyethylene, or similar plastic material, having a pair of parallel longitudinal grooves **32** extending substantially the full length of the body. Grooves **32** allow the ski to unstick from the snow more readily and reduce friction in running. A single groove or more than two grooves could be used if necessary. The tail end of the ski is cut substantially square and is preferably protected by a reinforcing strip **40** of metal or the like. The general structure of the ski, as illustrated in FIG. **4,** is well known in various forms and is not necessarily limited to the arrangement and materials described.

In plan form the ski is shorter than a conventional ski and approximately two and a half times the width. While the exact dimensions may vary to suit the rider and the required performance characteristics the basic proportions of a tested efficient ski are given as typical. For an overall length of 75 inches, the body has its maximum width of 8.31 inches at the beginning of the upward curve of tip **14,** marked as point A in FIGS. **1** and **2.** At the tail **16,** at point C, the width is 7.94 inches and at point B, substantially at the center of the body, the width is reduced to 7.62 inches. There is thus a very slight hourglass configuration to the body, far less than used in a conventional ski, the narrowest width being about 90 percent of the maximum width.

In side view, the body has its greatest thickness of 0.84 inch at point B, and tapers to 0.31 at point A and 0.38 at point **16.** The minimum thickness is thus essentially coincident with the maximum width of the body, to provide the required properties of flexibility. Expressed as proportions, the minimum thickness at the

tip is about 37 percent and the reduced thickness at the tail is about 45 percent of the maximum thickness.

The body has a longitudinally concave under surface with a small bottom camber of 0.375 inch with reference to a ground line **34** at point B, as opposed to a camber of up to an inch in a conventional ski. As a proportion, the bottom camber is less than half of the maximum thickness of the ski. It is emphasized that the exact dimensions are only typical and are given merely to indicate the unique configuration of the single ski relative to the conventional type.

The rider's feet are held in side by side position on the cenral portion of the body by any suitable bindings or boot retainers, represented in broken line as toe grips **36** and heel clamps **38.** Many different bindings and quick release fittings are available, and suitable securing means can be incorporated in the ski structure where needed.

The thickest portion of the body, at the center, has the greatest rigidity, the thickness being gradually reduced toward the tip and tail. If the tip and tail are too stiff, the ski will tend to dig into the snow and not release readily, so the ends are made quite flexible. In addition to the taper, the flexibility can be controlled, both longitudinally and torsionally by the orientation and density of the glass fiber reinforcing material, the technique being well known. While the actual proportions of flexibility and stiffness will depend somewhat on the weight of the rider, it has been found that the tip should be about 20 percent more flexible than the tail and the torsional resistance of the tail should be about 45 percent more than the tip. The tail needs to be stiffer than the tip to act as a rudder in a turn, but must have sufficient flexibility to provide a positive release from the snow at the beginning of a turn. In the ski described, the combination of the stiff center body and the flexible tail causes an actual upward and forward spring as the ski is unweighted when starting a turn. The tip must be sufficiently flexible to ride up or float on deep snow and to twist in a turning action, both being important with the wide, large area ski. Minimum bottom camber allows turning without undue unweighting action by the body, and provides more stability at high speed.

The single ski is simple to ride with both feet held together on a single platform, and there is no tendency for the feet to separate and get out of control in extreme maneuvers. Very tight pivot turns can be made at any speed without loss of stability, tests showing that the turning radius can be as little as one third of that possible with conventional dual skis. The wide area enables the ski to plane effectively and ride high in soft snow, which also facilitates maneuvering. In a fall the risk of injury is greatly reduced, since the feet do not fly in different directions, each with a long unweildy ski attached.

Having described our invention, we now claim.

1. A single snow ski, comprising,

an enlongated body of generally flat cross section, having a central portion, an upwardly curved forward tip and a tail portion, the length to width ratio of said body being about 9 to 1,

said body having its greatest thickness at the central portion and being reduced in thickness toward the tip and tail, the minimum thickness being adjacent said tip,

retaining means on said central portion for holding a rider's feet in close side by side relation,

and the minimum thickness adjacent said tip is approximately 37 percent of the maximum thickness of said body.

2. A single snow ski according to claim **1,** wherein said body has a longitudinally concave under surface, with a maximum camber at said central portion on the order of one half of the maximum thickness of the body.

3. A single snow ski according to claim **1,** wherein said body is reduced in width at said central portion, the minimum width being on the order of 90 percent of the maximum width.

4. A single snow ski according to claim **3,** wherein the maximum width of said body is adjacent said tip.

5. A single snow ski according to claim **3,** wherein the maximum width of said body is substantially coincident with the minimum thickness thereof.

6. A single snow ski according to claim **1,** wherein the reduced thickness of said tail is approximately 45 percent of the maximum thickness of the body.

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