

[54] **DOUBLE BEND STAVE**

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[58] Field of Search **280/11.13 S, 18, 19; 9/310 R, 9/310 B**

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[57] **ABSTRACT**

Staves which are useful as skis on snow and water. The staves are characterized by their substantially equal bends at their front and rear ends, total length of about 30–98 inches and width in the area between the bends of about 4.5–5.25 inches. The ratio of total length to width in the area between the bends, when the stave is less than 36 inches, is preferably 1:0.13–1:0.15. The staves have a grooved lower surface. The staves permit a high degree of stability, while retaining good maneuverability.

10 Claims, 3 Drawing Figures

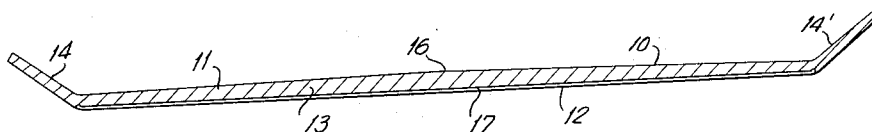


FIG. 1

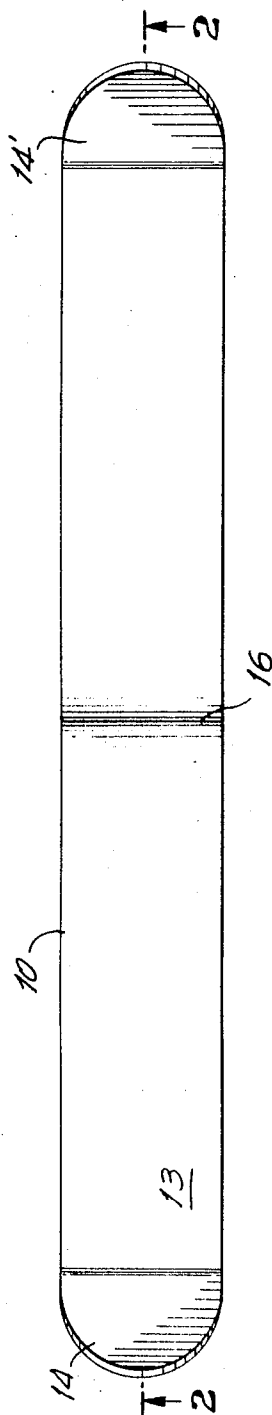


FIG. 2

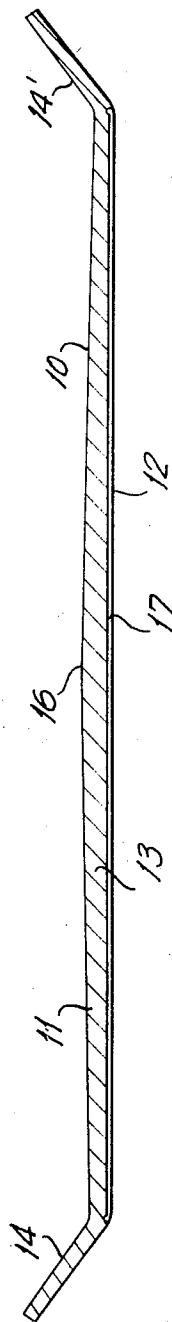
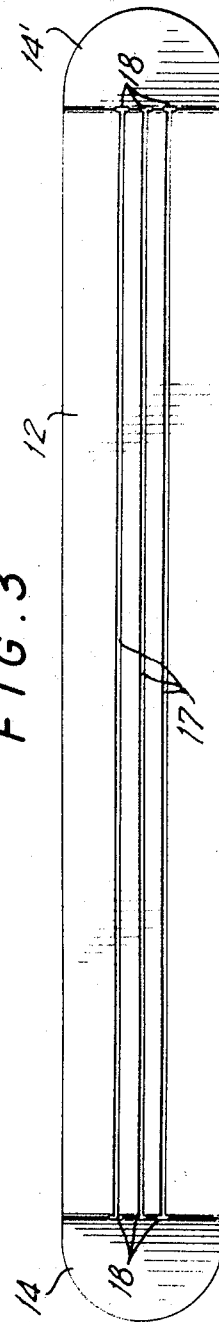


FIG. 3



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DOUBLE BEND STAVE

This invention relates to staves which are useful as vehicles on snow and water, such as skis and the like.

Staves which have been used in the prior art have generally been quite long, typically 5-6 feet long and even 8 feet long and more in the case of jump skis. Furthermore, they are typically narrow, that is, about 4 inches wide. Until one becomes proficient in using such staves, problems in stability are often present and serious falls may occur.

Shorter skis of about 4 feet in length have been used, primarily by children. However, such skis do not appreciably overcome the tendency of the skis to bite into the surface of snow or water, thus causing serious falls.

It is an object of this invention to provide a stave useful on snow or water which is both stable and maneuverable. Other objects will be apparent from consideration of the following description.

In accordance with certain of its aspects, this invention provides a stave having a length of 30-98 inches, said stave having a longitudinal grooved lower surface over at least its central portion and having the lower surfaces of the front and rear ends raised in equal arcs above the level of the lower surface of the central portion to a height of about 1-3 inches; said central portion having a width of about 4.5-5.25 inches.

The invention in accordance with its various aspects is typified by the accompanying drawings in which:

FIG. 1 shows a top plan view of a ski;

FIG. 2 shows a side elevational view of a ski in section along line 2-2 in FIG. 1;

FIG. 3 shows a bottom plan view of a ski in accordance with a preferred aspect of the invention.

More specifically, in the drawings, 10 is the upper surface of the ski; 11 the side as seen in section and 12 the bottom surface; 13 denotes the central portion; 14 the front bend and 15' the rear bend. The upper surface is preferably slightly raised, 16, toward the center of the ski above the level of the central portion near the bends.

In accordance with the invention, the bottom surface of the ski is preferably provided with three to five indented straight grooves, 17, extending longitudinally at least along the "running" portion thereof; that is, the part of the lower surface which is not bent upward. If desired, the groove may be extended to the bent portions too. At the ends of the longitudinally extending grooves, 17, are provided short horizontal grooves, 18, about one-eighth to one-fourth inch across. When three or five longitudinal grooves are employed, one extends along the central portion of the bottom surface of the ski and the remaining grooves are symmetrically spaced outwardly toward the edge. When four grooves are employed, as is depicted FIG. 3, there is no groove along the central portion of the bottom surface of the ski. The four grooves present are symmetrically spaced along the bottom surface, typically the outer two being about 1-1½ inches from each side and the inner two being about 2-2½ inches from each side. Generally, the grooves are indented about one-eighth to three-eighths inch. The grooves permit easy passage at high speeds over the surface traversed.

Staves of this invention, exemplified by the skis shown in the drawings, are desirable in providing a high degree of stability while moving over snow or water at high speeds and yet permit good maneuverability in performing turns, jumps and the like.

When it is desired to use the stave of the invention in jumping over snow, it is preferable to use longer lengths within the scope of the invention, such as about 60-98 inches. In such a situation, maximum stability is obtained when wider widths, such as about 5-5.25 inches, are employed in the stave.

When maneuverability over the surface of snow or water is desired, preferably the length of the stave is about 30-60 inches. A particularly satisfactory feature of the invention lies in the highly stable and maneuverably short stave having a length of about 30-36 inches. In such a short stave it is desirable for maximum stability compatible with good maneuverability to maintain a ratio of total length and width in the central portion of about 1:0.13 to 1:0.15. Typical short staves have the dimensions indicated in the table below.

TABLE

Total Length Inches (A)	Central Portion Width—Inches (B)	Ratio A:B
30	4.5	1:0.15
31	4.5	1:0.15
32	4.5	1:0.14
32	4.75	1:0.15
33	4.5	1:0.14
33	4.75	1:0.14
33	5.0	1:0.15
34	4.5	1:0.13
34	4.75	1:0.14
34	5.00	1:0.15
35	4.75	1:0.14
35	5.00	1:0.14
36	4.75	1:0.13
36	5.25	1:0.14

Thus, the total length of the short stave is 30-36 inches. It is preferably 33-36 inches, most preferably about 33 inches, and the width of the central portion is about 4.5-5.25 inches, preferably about 4.75-5.00 inches, and most preferably about 4.75 inches.

Thus, it is seen that the width varies narrowly with the length in the short stave. The width is typically at least a fraction of an inch wider than the foot or boot which is to be placed in means to be provided in the center of the upper surface of the stave. The resulting small overlap on both sides affords the traveler over snow or water a great deal of stability, while the ratio of the total length to the width of the central portion of the ski provides good maneuverability during travel. If the stave were wider, much of the maneuverability would be lost.

When the length of the stave exceeds that of the above-described short stave, that is, when it is about 36-60 inches in the case of a surface stave and about 60-98 inches in the case of a jumping stave, the amount of maneuverability is increased. The stability is somewhat diminished, but still exceeds the stability of narrower staves.

Typically, the thickness at the middle of the stave of the invention is about ¾-2 inches, preferably about ¾ inch and tapers off to about ½-¾ inch where the bends commence. The bends are typically about ¼-½ inch thick.

One of the major problems causing lack of stability during travel over snow or water, as during skiing, is the tendency of the rear portion of the stave to bite into the surface being traversed while attempting to execute a turn. In accordance with this invention, it has been found that this tendency to bite into the surface is substantially overcome by raising the rear end of the stave to about the same height as the front end, which front end is raised 1-3 inches from the bottom surface of the central portion of the stave in the conventional manner to clear away the impending surface to be traversed. Each of the bends typically commences about 2½ - 7½ inches from the ends of the staves. If the rearbend is not raised about equally to the front bend, stability would again be deleteriously affected.

The staves may be made of a material such as wood, of a plastic or of metals such as aluminum, or of compositions of one or more of these materials as are conventionally used in the art. They may be a single layer or may include a plurality of layers such as laminates. If desired, steel may be placed along the bottom edges to protect the bottom edges of the stave from becoming dull after use. Alternatively, steel may be placed along the entire width of the sides of the whole ski or of the central portion to promote stability during execution of turns. The bottom surface may contain material to insure high speeds over the surface traversed. This may be varnish, shellac, lacquer or other ski waxes. A bottom anti-stick surface of polytetrafluorethylene, sold under the trade mark Teflon, is preferably employed. When grooves are present on the bottom surface of the central portion of the stave, they can be made by any suitable method, such as stamping, molding or cutting, depending on the material grooved.

The following is a description of a preferred stave within the scope of the invention, but it should not be construed as limiting thereof.

A ski is formed from aluminum. The ski is 33 inches in total length from tip to tip and 4.75 inches in width across the widest portion at the center thereof. Thus, the ratio of total length to width is 1:0.14. Both the front and back ends of the ski are curved upwardly to a height of 2¾ inches, the curves commencing at a point 7½ inches from each end of the ski, leaving a central portion of 18 inches. The thickness of each of the front and back ends is ½ inch. The lower surface contains four parallel longitudinal grooves indented ¼ inch along the entire lower surface of the central portion. Two grooves are on each side of the lower surface of the ski. Two grooves are 1 inch from each of the left and right edges and two grooves are 2¼ inches from the same edges. The ends of each longitudinal groove are crossed with horizontal grooves ¼ inch long. At the points where the lower surface of the central portion commences, the thickness is ¾ inch and this thickness gradually increases to 7⁄8 inch at the center of the ski. The thickness of the ski is uniform across the width thereof.

Steel bars are attached to the sides of the central portion of the ski.

The lower surface of the central portion of the ski is polytetrafluoroethylene.

As is apparent from the foregoing description, the staves of this invention when taken as a pair have particular utility as skis. Preferably, such skis are used for rapidly traversing over water and slopes of snow. However, they may also be used for jumping, particularly when lengthened to about 60–98 inches—say 96 inches.

In addition to the features of stability and maneuverability possessed by the stave of this invention, it is also noteworthy that the shorter staves of the invention (such as those having a length of about 30–36 inches) are easily portable.

Although this invention has been described with reference to specific examples, it will be apparent to one skilled in the art that various modifications may be made thereto which fall within its scope.

It is claimed:

1. A stave having a length of 30–98 inches, said stave having a longitudinal grooved lower surface over about at least its central portion and having the lower surfaces of the front and

rear ends raised in equal arcs above the level of the lower surfaces of the central portion to a height of about 1–3 inches, said central portion having a width of about 4.5–5.25 inches, wherein when said stave is about 30–36 inches in length, the ratio of total length to the width of said central portion is about 1:0.13–1:0.15 and wherein when said stave is about 60–98 inches in length, the width of said central portion is about 5–5.25 inches.

2. A stave in accordance with claim 1 wherein said stave is about 30–60 inches in length.

3. A stave in accordance with claim 2 wherein said stave is about 30–36 inches in length and the ratio of total length to the width of said central portion is about 1:0.13–1:0.15.

4. A stave in accordance with claim 3 wherein said stave is about 33–36 inches in length and the width of said central portion is about 4.75 inches.

5. A stave in accordance with claim 1 wherein said stave is about 60–98 inches in length and the width of central portion is about 5–5.25 inches.

6. A stave in accordance with claim 1 wherein each of the raised bends extends about 2½ – 7½ inches from said central portion of the stave and each of said raised bends commences the same distance as the other from the end of the stave.

7. A stave in accordance with claim 6 wherein there are present three to five grooves extending longitudinally in straight lines along the entire length of at least the said central portion.

8. A stave in accordance with claim 1 wherein steel is attached to the sides of the central portion of said stave.

9. A stave in accordance with claim 1 wherein said stave is a ski.

10. A ski about 33 inches in length, said ski having a grooved lower surface over about 18 inches thereof, forming a central portion and arced bends on its front and rear portions forming raised front and rear ends respectively, the tips of said front and rear ends being about 2¾ inches above the lower surface of the central portion, said portion having a width of about 4.75 inches, said ski having the bends commence at a point about 7½ inches from the front and rear ends of the stave respectively, having four symmetrical longitudinal grooves along the entire length of the bottom surface of at least said central portion and having steel attached to the sides of said central portion.

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