Nov. 13, 1962 A. S. PATTERSON 3,063,728

SKI ATTACHMENT

Filed May 5, 1960

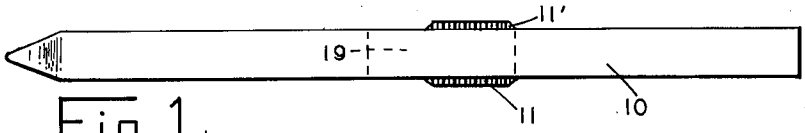


Fig. 1

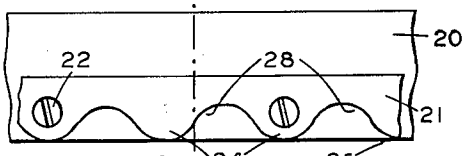


Fig. 2

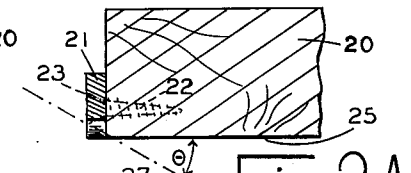


Fig. 2A

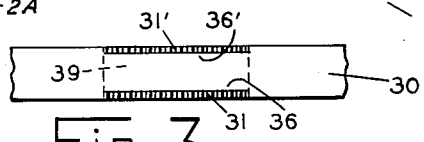


Fig. 3

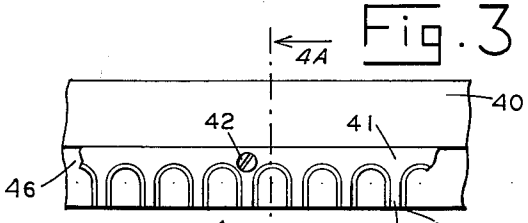


Fig. 4

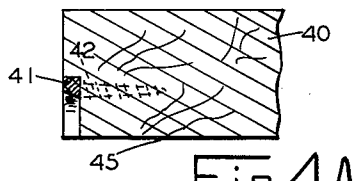


Fig. 4A

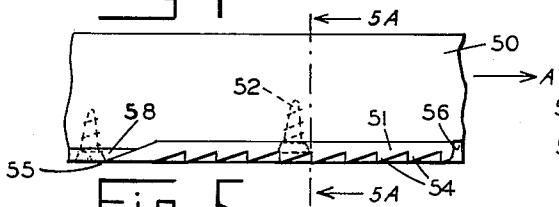


Fig. 5

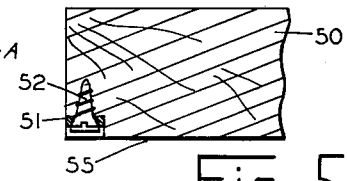


Fig. 5A

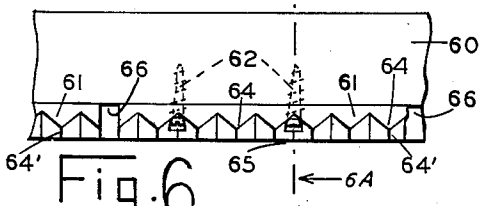


Fig. 6

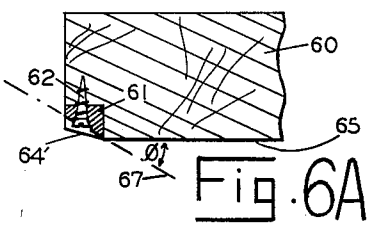


Fig. 6A

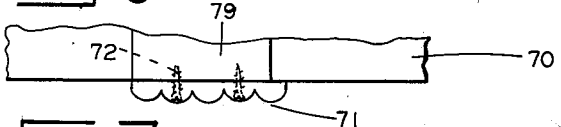


Fig. 7

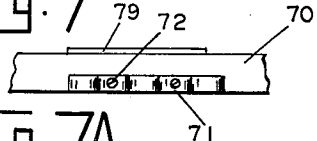


Fig. 7A

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SKI ATTACHMENT

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2 Claims. (Cl. 280—11.13)

My present invention relates to skis and, more particularly, to means for controlling skis on hardened icy crusts.

Now, it is well known that skis (other than water skis) are designed and intended for use on snow, and not on ice. Yet, the thawing and refreezing of snow due to weather changes produces icy spots in skiing areas. When these icy spots are unavoidably encountered, the skis are unable to grip the ice; the skier has poor control at best—the ice actually increasing his speed—and bad falls often result therefrom.

It is, therefore, an object of my invention to provide an improvement for skis that will afford greater control on icy surfaces.

The reason for the aforesaid lack of control on ice is found in the substantially smooth and unbroken running edges of conventional skis, these edges being the lateral boundaries of a running surface which, except for longitudinal grooves cut varyingly according to the manufacturer, is generally smooth and unbroken. The effect of this arrangement will be understood more fully when one of the most commonly used maneuvers for stopping is examined: the speeding skier, in order to present resistance to the snow surface, shifts his body and weight so that both skis turn, preferably while remaining substantially parallel, until they lie at a considerable horizontal angle to the direction of travel. Thus, the skis are swung so that their longitudinal axes are athwart of or transverse to the direction of travel, the angle varying with circumstances up to as much as 90 degrees. Concomitantly, the skis are canted so that the inside edge of one and the outside edge of the other are in contact with the snow surface, whereby a portion of the ski running surface cuts angularly into the snow.

Another popular stopping or speed-reducing maneuver is the so-called "snow plow" in which the skis are shifted so that their tips converge, forming the vertex of a V. In this maneuver the canting is such that the inside edges of both skis contact the snow surface. The ski running surfaces, as previously, angularly cut into the snow. In either case, the result is a skidding or scraping motion until the ski edges dig deeply enough into the yielding snow to cause a halt, but this operation is largely ineffective on a hard icy surface. This is dangerous to the skier and detrimental to the execution of precise maneuvers at high speeds which is one of the attractions of the sport.

It is therefore another object of this invention to provide an attachment for skis capable of obtaining greater traction on icy surfaces, under conditions similar to those described, but designed to have negligible effect on speed under normal conditions, i.e. when used on snow, and to leave unaffected most of the ski running surface.

It is yet another object of this invention to provide an attachment of this type which is easy and inexpensive to manufacture and which may be adapted, with certain relatively slight and readily accomplished modifications, to the great majority of skis.

In accordance with this invention I provide along either or both of the longitudinal edges of a skis, or a portion thereof, a series of discontinuities such as longitudinally spaced teeth or projections which terminate substantially at the level of the running surface of the ski (or slightly above that surface) and are therefore capable of cutting into the ice when the ski is canted at an angle to the direction of travel, thereby greatly increasing friction. Because of the enormous difference between the hardness

of ice and that of wood, of which the vast majority of skis are made, it is recommended that steel or some other comparably hard and wear-resistant substance be used.

According to a feature of my invention a steel strip is mounted along at least the inner edge of each of a pair of skis. The dimensions of this strip can vary within wide limits, except that its width should be small compared to that of the running surface of the ski. Preferred dimensions are a height of approxmately ½ inch (about 1.1 cm.), a width of ⅛ inch (about 2 mm.), and a length between 4 and 6 inches (10 to 15 cm.). An advantageous location for this strip on the ski is in the region of its footplate. If the strip is attached laterally to the ski, the width of the ski will be increased, in effect, by the thickness of the strip for the length of the latter. While this increase in width would in itself constitute a discontinuity in the ski edge, I prefer to enhance its efficiently by formng the lower edge of the strip with a plurality of longitudinally alternating projections and indentations, the projections being able to cut into a hard icy surface more deeply and more readily when the ski is canted and turned to a horizontal angle with respect to the direction of travel as previously described. (The tendency of hard ice to flake when scratched with a hard pointed object should be noted.)

Further with regard to the position of the strip on the ski, the approximate center of the length of the strip should correspond with the approximate center of the instep of the skier when the binding is drawn up into functional position. This relative position is recommended in that the instep is most important from the standpoint of balance, firm footing and control for the skier. Additionally, this is the thickest part of the ski and, therefore, the one least cambered. So located and positioned, the strip will provide adequate traction, yet will not interfere with normal flexing of the ski (as might occur with a longer strip). It is, however, also possible to provide a succession of such strips on the same side of the ski. The strip or strips may, furthermore, be lodged in a rabbet on the underside of the ski so as not to give rise to any increase in the effective width of the runner, even though the width of the strips may exceed that given above.

A thickness of not more than, say, 3/32 inch (14–18 ga., or about 2 mm.) should produce only a negligible drag effect when running in snow, even with the skis at an angle to the snow surface (as when traversing a steep slope). With laterally projecting strips, their end edges should be beveled inwardly so as to impede the accumulation of snow at these ends.

The above and other objects, features and advantages of the present invention will become more apparent from the following description, reference being made to the accompanying drawing in which:

FIG. 1 is a bottom view of a ski provided with side strips according to the invention;

FIG. 2 is a side-elevational view of the foot-plate portion of a ski similar to that shown in FIG. 1;

FIG. 2A is a cross-sectional view taken along line 2A—2A of FIG. 2;

FIG. 3 is a bottom view, similar to FIG. 1, of a ski provided with strips according to the invention received in rabbets therein;

FIG. 4 is a side-elevational view of the foot-plate portion of a ski similar to that shown in FIG. 3;

FIG. 4A is a cross-sectional view taken along line 4A—4A of FIG. 4;

FIG. 5 is a view similar to FIG. 4 of a ski having a modified edge strip;

FIG. 5A is a cross-sectional view taken along line 5A—5A of FIG. 5;

FIG. 6 is a side-elevational view of a ski according to still another embodiment of my invention;

FIG. 6A is a cross-sectional view taken along line 6A—6A of FIG. 6; and

FIGS. 7 and 7A show a further embodiment in top-plan and side-elevational view, respectively.

In FIG. 1 I show a ski or runner **10** whose longitudinal sides are provided, in the vicinity of footplate **19**, with edge strips **11** and **11'**. The biting and crust-engaging portions of the strips will be described subsequently with reference to FIGS. 2 and 2A.

In FIGS. 2 and 2A an edge strip **21** is attached to ski **20** by means of screws **22** passing through holes **23** of the strip. The lower portion of strip **21** is formed with projections **24** and indentations **28** in undulating relationship, the projections **24** being, at their lowermost point, substantially flush with the running surface **25** of the ski. The curvature of the projections **24** renders them non-functional until the ski is canted so that its running surface **25** includes a horizontal angle (e.g. θ) with the icy surface **27** (dot-dash line) whereby the projections bite into the surface to afford control.

FIG. 3 is illustrative of a ski **30** formed with a pair of rabbets **36**, **36'** along the running edges thereof. The rabbets are adapted to receive a pair of strips **31**, **31'** in the vicinity of the footplate **39** of ski **30**.

The edge strip **41** of FIGS. 4 and 4A is, like strips **31**, **31'**, mounted in a rabbet **46** cut into the side of the ski **40**. The strip **41** is provided with countersunk holes adapted to admit the screws **42** (one shown) which fasten it substantially flush with the side face of ski **40**. The rabbett **46** may be suitably waterproofed in a manner known per se before the strip **41** is mounted therein. The lower portion of the strip is provided with scalloped projections **44** which terminate level with the running surface **45** of the ski and are beveled in order to lessen the possibility that snow and ice may accumulate between the individual projections and reduce their effectiveness when the ski is canted. The outward taper of the beveled edges facilitates the brushing out of accumulated snow and ice particles between the projections.

In FIGS. 5 and 5A I show a ski **50** whose rabbet **56**, in the region of the footplate, receives an edge strip **51** which is secured to the ski by screws **52** extending upwardly through countersunk holes in the strip. The outer edge of the strip **51** is substantially flush with the side of the ski. The relatively thin strip **51** is provided with downwardly projecting teeth **54** that slant in a direction opposite to that of travel (arrow A) so as to offer no resistance to snow. The vertices of the teeth **54** lie flush with the running surface **55** of the ski **50**. The latter may be provided with a smooth protective strip **58** extending along the remainder of the edge thereof and overlappingly adjoining the serrated strip **51**. Since the latter may be relatively thin (about 20 gauge in thickness), it will flex with the ski when normal bending stresses are encountered. I have found that a suitable strip **51** has a width of the order of $\frac{5}{16}$ inch (about 6 mm.) and a length of approximately 10 inches (about 25 cm.).

FIGS. 6 and 6A illustrate a ski **60** which, like ski **50**, is provided with a rabbet **66** adapted to receive a plurality of toothed edge strips **61** arranged sequentially in end-to-end relationship and secured to the ski by upwardly extending screws **62**. Each strip is formed with a set of teeth **64** whose ridges **64'** lie in an inclined plane and have points located slightly above the running surface **65** of the ski. The troughs separating the teeth **64** are of triangular cross-section, the line **67** (FIG. 6A) through the hypotenuse of the triangle indicating the angle of canting ϕ at which these teeth will bite most effectively into the ice-covered ground. It will be noted that, during normal skiing, the teeth will completely clear the ground and not interfere with the skier's motion.

FIGS. 7 and 7A show a further modification in which a fluted strip **71** is laterally affixed to a ski **70**, in the region of its footplate **79**, by means of screws **72**. The undulated lower edge of this strip forms rounded teeth effectively biting into the icy surface when the ski is canted.

The strips **11**, **21**, **31**, **41**, **51**, **61** and **71** may be constructed from sheet metal (e.g. steel), their teeth, undulations, scallops and similar flutings being machined or stamped therein. The effective spacing of the peaks of these downwardly and/or outwardly projecting formations may be of the order of 2 to 3 mm. With metal runners, of course, the flutes or inter-teeth spacings can be molded or machined directly into the body of the ski.

It will be readily apparent that any of the features illustrated or described may be combined with other features to the extent to which they are compatible; these and other modifications within the ability of persons skilled in the art are intended to be embraced within the spirit and scope of the invention as defined in the appended claims.

I claim:

1. In a ski, in combination, a runner, a strip of a length and a width representing small fractions of the corresponding dimensions of said runner, and fastening means securing said strip along a longitudinal edge of the runner substantially only in the region of the foot-supporting portion of the ski, above the skiing surface of said runner, said strip being provided with an exposed edge laterally offset from said longitudinal edge and formed with longitudinally spaced discontinuities wholly outwardly of the outline of said runner.

2. In a ski, in combination, a runner provided with a continuous longitudinal edge, a strip of a length and a width representing small fractions of the corresponding dimensions of said runner, and fastening means securing said strip to said runner along said longitudinal edge and outwardly thereof in the region of the foot-supporting portion of the ski, above the skiing surface of said runner, said strip being provided with an exposed lateral edge of horizontally indented profile wholly outwardly of the outline of said runner substantially only in the region of the foot-supporting portions of the ski, said lateral edge being substantially coplanar with the skiing surface of said runner and said longitudinal edge.

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