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(54) **ANTI-ZIGZAG GUIDE RAIL WITH  
EXTENSION OF PROTECTION**

**Publication Classification**

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(57) **ABSTRACT**

The present invention relates to a prior application U.S. Ser. No. 11/705,116 <<ANTI-ZIGZAG GUIDE RAIL FOR SNOWMOBILE SKI>> wherein a flat rectangular extension (122) is added to protect from wear the skittle of a snowmobile ski when crossing rocky paths. The flat extension is used as floating link between the guide and the tail (131) of a wear runner laid out longitudinally of the ski. The guide (120) located at the front of the ski is always engaged, along with the self-sharpening runner, in ice, while the extension (122) keeps the back of the ski flat. The extension may be of a reversed U-shape comprising an extra web (135) and two extra cutting wings (136) protruding from the web (135) to a certain depth in direction of the ground and longitudinally of the extension, thus defining five cutting trails.

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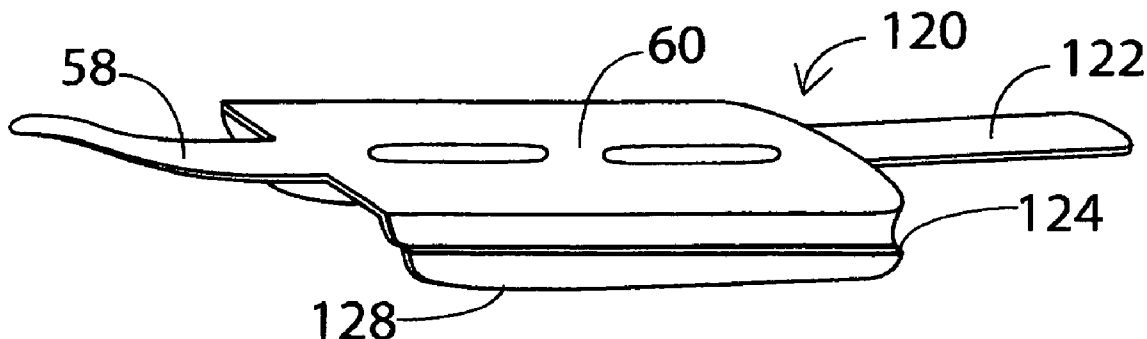
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(63) Continuation-in-part of application No. 11/705,116,  
filed on Feb. 12, 2007.

(30) **Foreign Application Priority Data**

Jun. 29, 2007 (CA) ..... 2,535,532



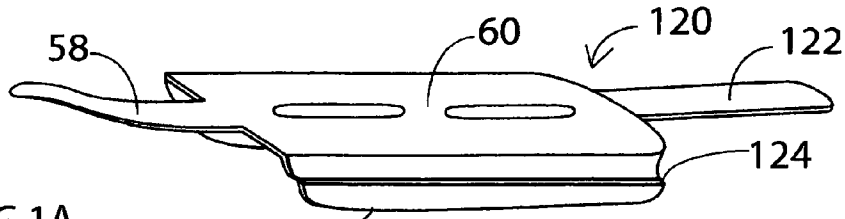


FIG. 1A

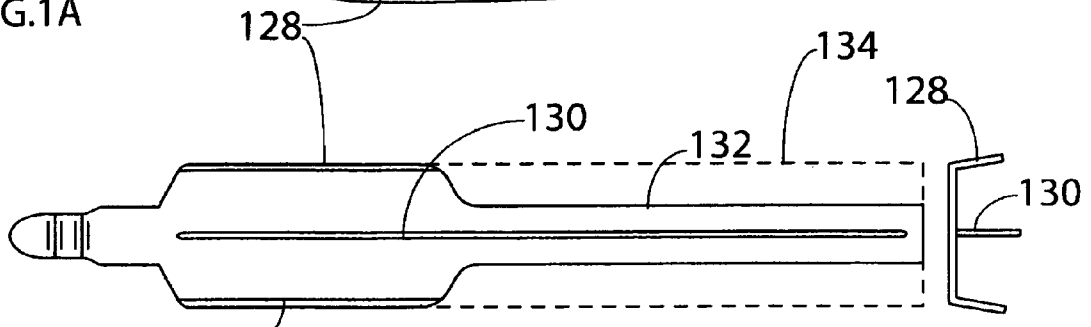


FIG. 1B

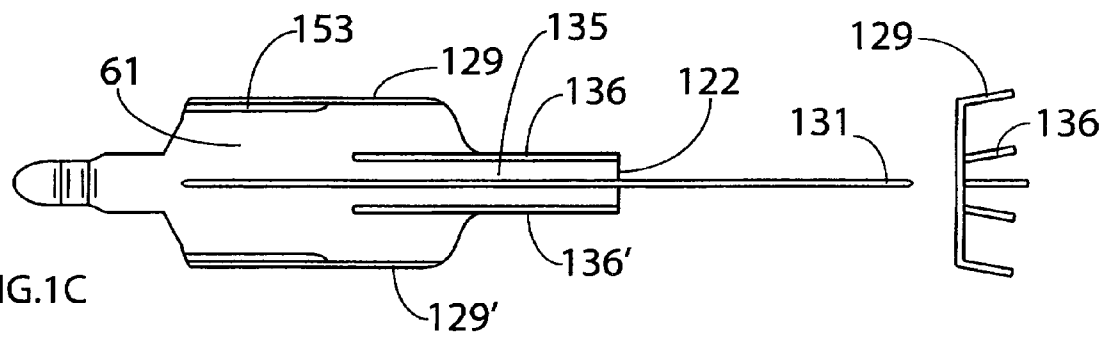


FIG. 1C

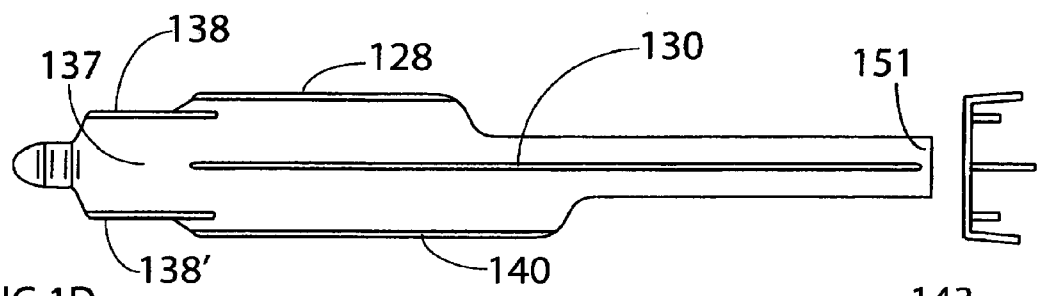


FIG. 1D

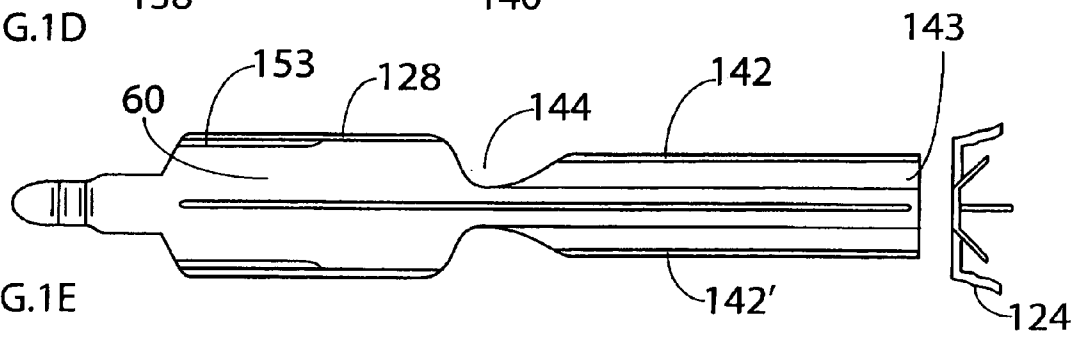
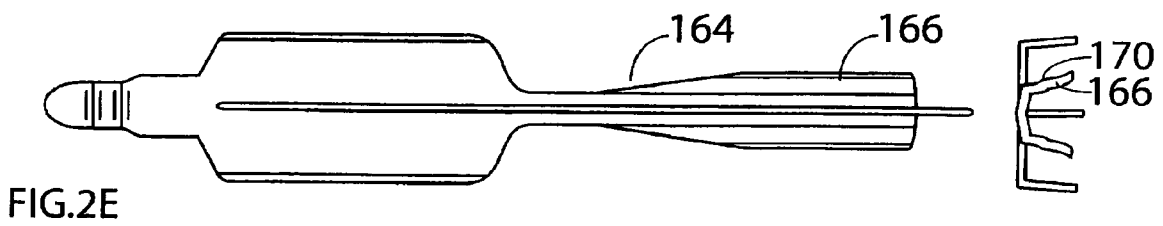
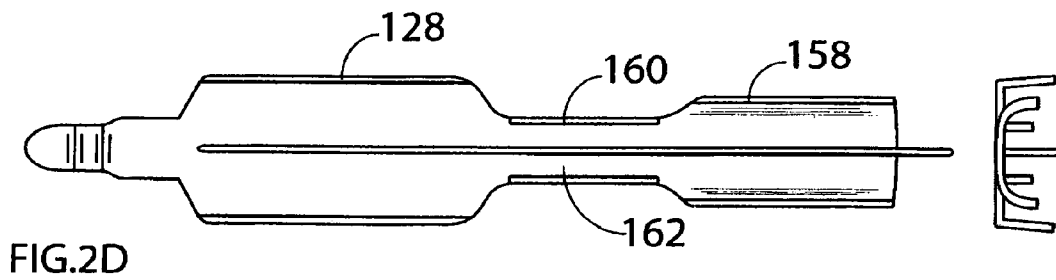
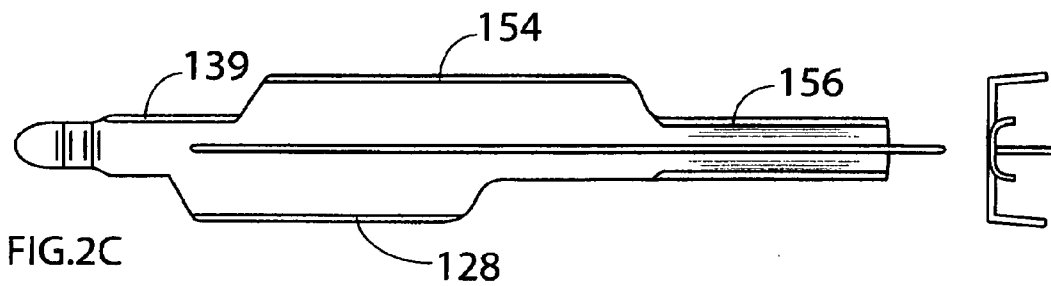
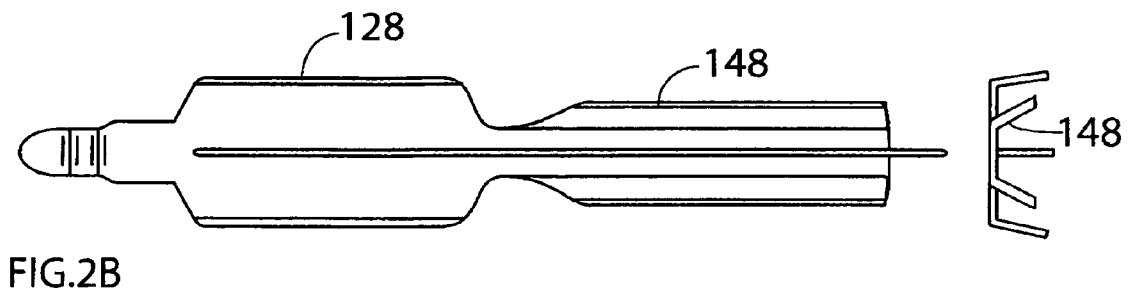
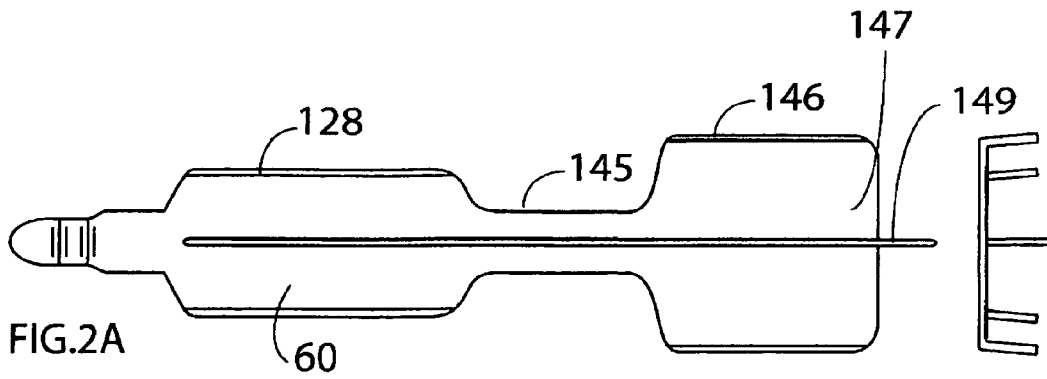


FIG. 1E



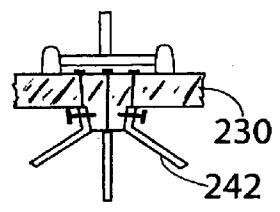
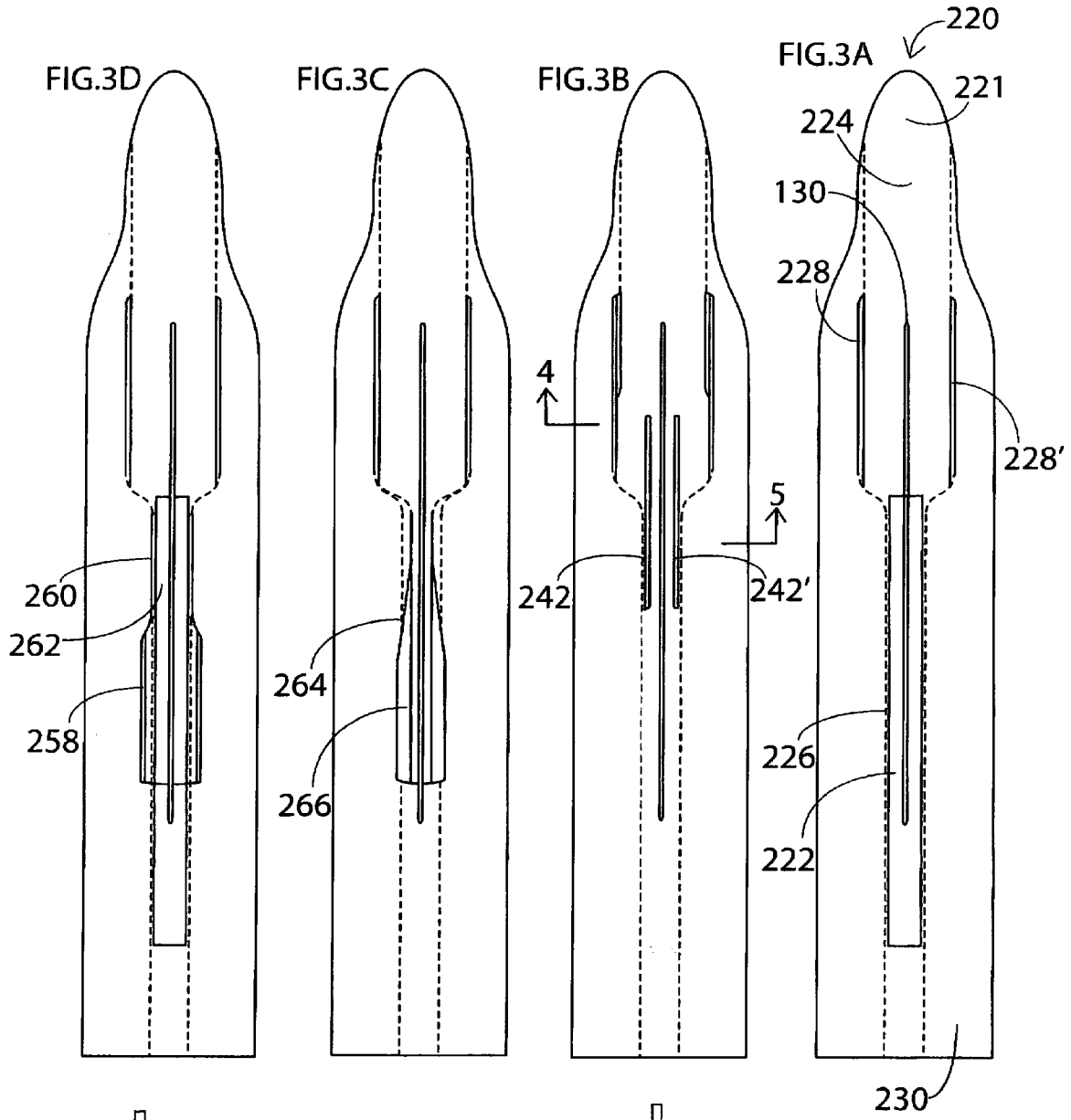


FIG. 5

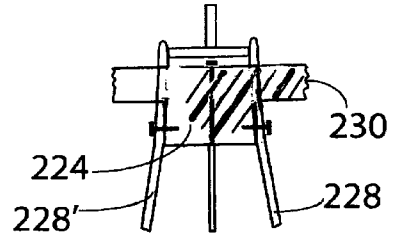


FIG. 4

**ANTI-ZIGZAG GUIDE RAIL WITH  
EXTENSION OF PROTECTION**

**DETAILED DESCRIPTION OF THE PREFERRED  
EMBODIMENTS**

**BACKGROUND OF THE INVENTION**

[0001] The present invention relates to the control of the skis of a snow vehicle, particularly to devices which control the traction of skis of a snow vehicle on soft ice.

**PRIOR ART**

[0002] The present invention refers to five preceding inventions of the same author: initially CA2300359 concerns a stabilizer in a reversed U-shape superimposed with an existing runner, the wings of the U being cutting while the web thereof is covered with a slipping product. CA2442304 concerns an aggressive product whose wings become aggressive repeatedly at the contact of several openings over its length; CA2388833 concerns a rectangular, thin runner which is laid out longitudinally and which is self-sharpening. CA2378638 concerns a reversed U-shape with a removable central runner. Finally U.S. Ser. No. 11/705,116 which includes two wings in a reversed U-shape whose web is tied to the lower face of a ski, combined with a particularly rectangular runner laid out on the side, in continuation and in line with the guide. Thus providing an adherence without floating on soft snow at the time of fast turns.

**OBJECTIVES AND ADVANTAGES**

[0003] A precise objective is to protect from wear the skittle of a snowmobile ski, by adding a rectangular flat extension to the runner, and to provide a better adherence of the guide especially in soft snow by adding cutting wings on the extension which when engaged on ice provide more stability to the snowmobile ski.

**BRIEF DESCRIPTION OF THE DRAWINGS**

- [0004] FIG. 1A is a perspective of a guide alone with a tail
- [0005] FIG. 1B are bottom and end views of the guide of FIG. 1A with a long tail
- [0006] FIG. 1C are views of an enlarged guide with a short tail and five trails
- [0007] FIG. 1D are views of the guide with a lengthened side and enlarged front
- [0008] FIG. 1E are views of the guide with a neck and five trails
- [0009] FIG. 2A are views of the guide with an enlarged tail
- [0010] FIG. 2B are views of FIG. 1E but with oblique wings
- [0011] FIG. 2C are views of the guide with a displaced side and rounded wings
- [0012] FIG. 2D are views of the guide with central knives and seven trails
- [0013] FIG. 2E are views showing a progressive tail and recessed wings
- [0014] FIG. 3A is a view of a ski with guide and three trails
- [0015] FIG. 3B is a view of a ski with guide and five trails
- [0016] FIG. 3C is a view showing a progressive tail with guide
- [0017] FIG. 3D is a view of a ski with guide and seven trails
- [0018] FIG. 4 is a view according to section 4 of FIG. 3B
- [0019] FIG. 5 is a view according to section 5 of FIG. 3B

[0020] In the following description and in the accompanying drawings, the numeral numbers refer to identical parts in the various Figures.

[0021] FIG. 1A shows a guide 120 alone with a tie 58 which fits in a ski for attaching the guide thereto. A guide web 60 includes two cutting wings 128 disposed in direction of the ground and longitudinally of the ski. Those cutting wings are slightly open towards outside of the ski by a horizontal offset 124 of typically 1 mm. Knife wings 128 installed at the lower part of the wings render the wings cutting. One sees a short tail 122.

[0022] FIG. 1B shows the guide with a long tail 132, as long as a runner 130 and preferably exceeding it. The width of the long tail can be enlarged 134 as much as the spacing between the knife wings 128. The wings in the web of the guide are slightly open towards outside of the ski, the sharpness being encountered at the ends of the wings and digging two oblique trails on ice. An oblique angle for wings in the web guide is typically 10°.

[0023] FIG. 1C shows the guide with the short tail 122, shorter than the runner 130, in reversed U-shape comprising an extra web 135 and extra knives 136, 136' which continue under the guide. The web 61 of the guide is enlarged and spaced wings 129 are slightly open towards outside of the ski by an offset wing 153. Thereby defining five trails.

[0024] FIG. 1D shows a guide with a lengthened side 140 and with the front of the guide enlarged and in reversed U-shape combined with a web 137 and two front wings 138, 138'. The tail ends 151 at the end of the runner.

[0025] FIG. 1E shows a guide in which a neck 144 connects the web 60 of the guide to the tail of the guide. Back knives 142, 142' show 45° cutting wings. The web 60 shows offset wings 153. Wings 128, 153, 154 are slanted 0 to 45°.

[0026] FIG. 2A shows a guide with a longer neck 145 between the web of the guide and the tail, and an enlarged tail 147, larger than the web guide, with back spaced cutting wings 146.

[0027] FIG. 2B shows the wings 148 on the tail more open towards outside by about 80°. It may be from 0 to 90°.

[0028] FIG. 2C shows the guide with a lengthened displaced side 154 and rounded wings 156 on the tail protruding in direction of the ground. One front wing 139 is in line with an end rounded wing 156 which result in a same trail with a total of five trails, not six, and particularly suited for a left hand or a right hand ski.

[0029] FIG. 2D shows the guide with a neck, between the web and the tail, in reversed U-shape comprising an intermediate web 162 and two intermediate cutting wings 160 which may be slanted 0 to 90°. Back rounded spaced wings 158 are showed. Thus defining seven trails.

[0030] FIG. 2E shows the guide with a progressive tail 164 and recessed wings 166 with an extension offset 170.

[0031] FIG. 3A shows a ski 220 comprising means acting like a guide including two parallel cutting wings 228, 228' laid out on the back of the ski and disposed in direction of the ground and longitudinally of the ski, a runner 130 between the cutters 228 and a rectangular extension 222 made in metal which is inserted in continuation of the cutters towards the back of the ski 220. A flat surface 224 in plastic is provided between the two cutting wings 228 and is prolonged until the

front **221** of the ski **220**. Those cutting wings are slightly open towards outside of the ski. A plastic surface **226** surrounds the extension **222**. The runner **130** and the two cutters **228** define three trails on the snow.

[0032] FIG. 3B shows a ski with or without the extension **222** in front of which two parallel cutters **242**, **242'** are added longitudinally at its ends, thereby defining five trails on the snow.

[0033] FIG. 3C shows a ski with a progressive extension **264** and recessed wings **266** on it. An extension **222** is not shown and it may or may not be present.

[0034] FIG. 3D shows a ski with a rectangular neck **262** located between the front cutters and the back of the extension **222**. The neck **262** comprises two parallel cutting wings **260**, **260'**. An enlarged rectangular section is added at the back of the extension and includes two parallel cutting wings **258**, **258'**. Thus defining seven trails on ice. The extension may or not be present.

[0035] FIG. 4 shows a plastic surface **230** between the two cutters **228**, **228'** which are fixed on it.

[0036] FIG. 5 shows the oblique cutters **242**, **242'** fixed on the plastic surface **230** and positioned on both sides of the metal extension **222**.

#### SUMMARY OF THE INVENTION

[0037] A guide **120** to fix at the front of a ski of a snow vehicle defining a short section in reversed U-shape comprising a web **60** and two cutting wings **128** and provided with a rectangular extension at the back of the guide, on the tail **122** of the guide. The tail **122** can be as long as the wear runner **130** or shorter than the length of the wear runner. The tail can be flat or in reversed U-shape comprising an extra web **135** and two extra cutting wings **136** protruding from said web to a certain depth in direction of the ground and longitudinally of the extension. Those cutting wings protruding in direction of the ground can be slightly open towards outside or rounded, thereby defining five trails.

[0038] The web **60** of the guide **120** can be an enlarged web **61** for passing a sizeable quantity of snow between the five trails, and the front **137** of the guide can be defined with a pair of front cutters **138**.

[0039] A wing offset **124** is defined for providing an enlarged channel for passing snow and rocks without obstruction. It may or not be present in any model.

[0040] An extension **143** is used to separate by a neck **144** the guide and the tail. The extension **143** can be enlarged in a tail **147** positioned externally to the cutting wings **128** of the web guide **60**.

[0041] Front cutters **138** can be limited to one only on one side, a back part comprising two back cutters **156**, one back cutter being aligned to one front cutter **138**, the combination thereof encompassing five trails.

[0042] The neck **144** can be replaced either by a cutter section **162** with a pair of intermediate cutting wings **160** thereby causing a seven trail system, or by a progressive channel **164** and the extension **143** being enlarged to permit location of recessed wings **166** having an extension offset **170**.

[0043] A snowmobile ski **220** used in combination with a runner **130** positioned longitudinally of the ski **220**, the ski comprising in its front part **221** a pair of spaced front cutters **228**, **228'** for guiding snow on each side of the runner **130**, the knives **228** being followed by an extension **222**.

[0044] The ski combination comprises a front raised surface **224** adapted to retain the spaced front cutters **228**. The extension **222** comprises a flat metal part adapted to slide over icy snowy surfaces. The extension **222** comprises a pair of obliquely disposed cutters **242** thereby defining five **5** trails.

[0045] The extension has a back raised surface width **226** equivalent to 55%+ or - 45% of the width of the front raised surface **224**.

[0046] It is to be clearly understood that the instant description with reference to the annexed drawing is made in an indicative manner and that the preferred embodiments described herein are meant in no way to limit further embodiments realizable within the scope of the invention. The matter which is claimed as being inventive and new is limited only by the following claims.

PARTS	
58	Tie
60	Guide web
61	Enlarged web
120	Guide
122	Short tail
124	Horizontal offset
128, 128'	Cutting wings
129	Spaced Wings
130	Wear runner
132	Long tail
134	Enlarged tail
135	Extra web
136, 136'	Extra wings on short tail
138	Front spaced wings
139	A single front wing
140	Lengthened side
142, 142'	Back knives
144	Neck
143	Tail end extension
145	Longer neck
146	Back spaced cutting wings
147	Tail larger than the web guide
148	50° opened cutting wings
151	Tail end
153	Offset wing
154	Lengthened displaced side on a guide
156	Rounded wing
158	Back rounded cutting wings
160	Intermediate cutting wings
162	Intermediate cutter section
164	Progressive tail
166	Recessed wings
170	Extension offset
220	Ski
221	Front of the ski
222	Extension
224	Raised surface
226	Plastic surface around the tail
228, 228'	Front cutters in a ski
230	Plastic surface
242, 242'	Oblique cutters
258, 258'	Back wings in a ski
260, 260'	Intermediate wings in a ski
262	Neck in a ski

I claim:

1. (FIG. 1A) A guide (**120**) to fix at the front of a ski of a snow vehicle, said guide defining a short section in reversed U-shape comprising a web (**60**) and two cutting wings (**128**) protruding from said web to a certain depth in direction of the ground and longitudinally of said ski, said web comprising

means for fixing to a lower face of said ski, said guide having a tail (122) in a rectangular form for sitting flat against a bottom face of said ski.

2. (FIG. 1C) The guide of claim 1 wherein said tail (122) defines a short section in reversed U-shape comprising an extra web (135) and two extra cutting wings (136) protruding from said extra web to a certain depth in direction of the ground and longitudinally of said ski, thereby defining five trails.

3. (FIG. 1D) The guide of claim 2 comprising a front part (137) provided with a pair of front cutters (138) aligned between and parallel to said cutting wings (128) and defining thereby five trails.

4. (FIG. 1A) The guide of claim 1 wherein said cutting wings comprise a guide offset (124) for providing an enlarged channel for passing snow and rocks without obstruction.

5. (FIG. 1C) The guide of claim 2 wherein said web (60) is an enlarged web (61) capable of passing a sizeable quantity of snow between said five trails (129, 129',130,136,136').

6. (FIG. 1E) The guide of claim 2 comprising an extension (143) separated by a neck (144) from said guide web, said extension comprising a pair of cutting wings (142) disposed at a slant about said tail, said slant 0 to 90°.

7. (FIG. 2A) The guide of claim 6 wherein said extension (143) is an enlarged tail (147) positioned externally to said cutting wings (128) of said web guide (60).

8. (FIG. 2C) The guide of claim 3 wherein said front cutters (138) are limited to one only on one side, a back part comprising two back cutters (156), one back cutter being aligned to said one front cutter (138), the combination thereof encompassing five trails.

9. (FIG. 2D) The guide of claim 6 wherein said neck (144) is replaced by an intermediate cutter section (162) with a pair of intermediate cutting wings (160) thereby defining a seven trail system.

10. (FIG. 2E) The guide of claim 6 wherein said neck (144) is replaced by a progressive channel (164) and said extension (143) is enlarged to permit location of recessed wings (166) having an extension offset (170).

11. (FIG. 2C) The guide of claim 8 wherein said back cutters (156) are rounded.

12. (FIG. 3A) A snowmobile ski (220) used in combination with a runner (130) positioned longitudinally of said ski (220), said ski comprising in its front part (221) a pair of spaced front cutters (228,228') for guiding snow on each side of said runner (130), said knives (228) being followed by an extension (222).

13. (FIG. 3A) The ski combination of claim 12 wherein said ski comprises a front raised surface (224) adapted to retain said spaced front cutters (228).

14. (FIG. 3A) The ski combination of claim 13 wherein said extension (222) comprises a flat metal part adapted to slide over icy snowy surfaces.

15. (FIG. 5) The ski of claim 14 wherein said extension (222) comprises a pair of obliquely disposed cutters (242) thereby defining 5 trails.

16. (FIG. 3A) The ski of claim 15 wherein said extension has a back raised surface width (226) equivalent to 55%+ or -45% of the width of said front raised surface (224).

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