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(54) **Snowboard with upper edge**

Snowboardoberkante

Snowboard avec carre supérieure

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## Description

### Technical Field

**[0001]** The present invention relates to a snowboard provided with upper edges above sole edges.

### Background Art

**[0002]** Winter sports such as snowboarding and skiing are becoming popular not only among young people but also among various generations. In the case of snowboarding and skiing, in turning and braking, so-called edging is performed by tilting skis or a snowboard to engage the edge thereof while sliding.

**[0003]** When such edging is performed, for strong edging, it is required to greatly tilt the snowboard or the skis, and engage the edge at a large angle to a snow surface. However, if the edge is strongly engaged, there is the possibility that the edge is easily released and thereby force is not transmitted to the snow surface. When the edge is released, turning and braking cannot be performed any longer, which causes falling. Especially in the case of the hard snow surface such as a frozen ski slope, the edge tends to be released more often, and hence the operation of a snowboard and skis tends to become unstable.

**[0004]** The European Patent Application EP 1213041 A (Art. 54(3)) discloses a binding-free sliding device with an elongated deck attached elevated from a runner.

**[0005]** Document WO 95/13119 discloses a snowboard according to the preamble of claim 1.

### Disclosure of the Invention

**[0006]** An object of the present invention is to provide a snowboard, whose edges are not released easily even when being strongly engaged and which are easy to operate.

**[0007]** To attain this object, in the present invention, a snowboard provided with sole edges along corner portions on both the left and right sides of a sliding surface comprises left and right upper edges respectively provided above the left and right sole edges so as to protrude more to the left and right sides of the snowboard than the left and right sole edges.

**[0008]** In the snowboard of the present invention, when the board is greatly tilted, a snow surface can be caught by both the sole edge and the upper edge, and even when the sole edge is released, the snow surface can be caught by the upper edge.

**[0009]** In the present invention, the left and right upper edges are tilted so that the ground contact angles of the left and right upper edges become smaller than the ground contact angles of the left and right sole edges. If so, the upper edge comes in contact with the snow surface at an angle smaller than the ground contact angle of the sole edge, whereby the tendency for the upper

edge to be released reduces, and the snow surface can be easily caught.

### Brief Description of Drawings

**[0010]** The figures 2, 3 and 5-7 represent embodiments useful to understand the invention but that do not include all the features of the invention.

FIG. 1 is a perspective view of a snowboard according to an embodiment of the present invention; FIG. 2 is a sectional view taken along the line X-X in FIG. 1;

FIG. 3 is a partial enlarged sectional view showing the relation between an upper edge and a sole edge; FIG. 4 is a partial enlarged sectional view showing the relation between the upper edge and the soled edge in which the ground contact angle of the upper edge is formed smaller than that of the sole edge;

FIG. 5 is a partial enlarged sectional view showing a structure in which the upper edge and the soled edge are integrally provided;

FIG. 6 is a partial enlarged sectional view showing a structure in which two upper edges are provided above the sole edge;

FIG. 7 is a partial enlarged sectional view showing a structure in which three upper edges are provided above the sole edge.

### Best Mode for Carrying out the Invention

**[0011]** Preferred embodiments of the present invention will be explained below with reference to the drawings. FIG. 1 is a perspective view of a snowboard 1 according to an embodiment of the present invention. FIG. 2 is a sectional view taken along the line X-X in FIG. 1.

**[0012]** Screw holes 9 for attaching a binding 40 described later are provided at plural positions of an upper surface 8 of the snowboard 1. By using these plural screw holes 9, the binding 40 can be attached to the upper surface 8 of the snowboard 1 in a desired position.

**[0013]** A lower surface 10 of the snowboard 1 is a flat sliding surface and made of resin resistant to adhesion of snow. Sole edges 11 and 11 are provided along corner portions on both the left and right sides of the lower surface 10 (sliding surface). The sole edges 11 and 11 are formed of a hard material such as metal.

**[0014]** As shown in FIG. 3, a corner portion 11' of the sole edge 11 is formed to have almost a right angle (approximately 85° to approximately 90°), a bottom surface 11a of the sole edge 11 is placed on the same plane with the lower surface of the snowboard 1, and in the shown example, similarly to a side surface 13 of the snowboard 1, a side surface 11b of the sole edge 11 is formed on a plane which stands almost perpendicular to the bottom surface 11a of the sole edge 11.

**[0015]** As shown in FIG. 2, above the left and right sole edges 11 and 11, left and right upper edges 12 and 12

are provided, each being fixed to an upper portion of the side surface 13 of the snowboard 1. These left and right upper edges 12 and 12 are provided so as to protrude more to the left and right sides of the snowboard 1 than the sole edges 11 and 11 provided at the corner portions on both sides of the lower surface of the snowboard 1.

**[0016]** In this embodiment, as shown in FIG. 3, a corner portion 12' of the upper edge 12 is also formed to have almost a right angle (approximately 85° to approximately 90°), a bottom surface 12a of the upper edge 12 is placed parallel to the bottom surface 11a of the sole edge 11 and the lower surface 10 of the snowboard 1, and a side surface 12b of the upper edge 12 is formed parallel to the side surface 11b of the sole edge 11 and the side surface 13 of the snowboard 1 and on a plane which stands almost perpendicular to the bottom surface 12a of the upper edge 12.

**[0017]** Moreover, in this embodiment, such an arrangement that an angle  $\alpha$  which the bottom surface 11a of the sole edge 11 forms with a virtual line L connecting the corner portion 11' of the sole edge 11 and the corner portion 12' of the upper edge 12 and an angle  $\beta$  which the bottom surface 12a of the upper edge 12 forms therewith are both approximately 70° is made, and the upper edge 12 is provided so as to protrude more to the side of the snowboard 1 than the sole edge 11.

**[0018]** Incidentally, when a person rides the snowboard 1 structured as above and performs turning and braking while sliding, he or she performs so-called edging by tilting the snowboard 1 to engage the sole edge 11. In this case, if the snowboard 1 is tilted approximately 70°, it becomes possible to catch a snow surface by the corner portion 11' of the sole edge 11 and the corner portion 12' of the upper edge 12. Further, even if the sole edge 11 is released since the snowboard 1 is excessively tilted, the snow surface can be caught by the upper edge 12. Hence, even if the snowboard 1 is greatly tilted, the edge is not easily released, therefore turning and braking can be performed easily without falling, and the operation of the snowboard 1 is stabilized.

**[0019]** The example of such an arrangement that the angle  $\alpha$  which the bottom surface 11a of the sole edge 11 forms with the virtual line L connecting the corner portion 11' of the sole edge 11 and the corner portion 12' of the upper edge 12 and the angle  $\beta$  which the bottom surface 12a of the upper edge 12 forms therewith are equal to each other is shown in FIG. 3, but according to the invention the ground contact angle of the upper edge 12 is made smaller than that of the sole edge 11 by tilting the upper edge 12 upward as shown in FIG. 4.

**[0020]** In the example shown in FIG. 4, by tilting the bottom surface 12a of the upper edge 12 by an angle  $\theta$  upward from the bottom surface 11a of the sole edge 11 and the lower surface 10 of the snowboard 1, the angle  $\beta$  which the bottom surface 12a of the upper edge 12 forms with the virtual line L connecting the corner portion 11' of the sole edge 11 and the corner portion 12' of the upper edge 12 becomes smaller than the angle  $\alpha$  which

the bottom surface 11a of the sole edge 11 forms therewith by the angle  $\theta$  ( $\beta = \alpha - \theta$ ).

**[0021]** If the upper edge 12 is tilted upward as described above, the upper edge 12 comes in contact with the snow surface at the ground contact angle  $\beta$  which is smaller than the ground contact angle  $\alpha$  of the sole edge 11 when the snow surface is caught by both the corner portion 11' of the sole edge 11 and the corner portion 12' of the upper edge 12, whereby the tendency for the upper edge 12 to be released reduces, and the snow surface can be easily caught. As a result, it is more difficult to release the edge, and the operation of the snowboard 1 becomes more stable. Incidentally, when the upper edge 12 is tilted upward as stated above, it is recommended that the angle  $\theta$  by which the upper edge 12 is tilted upward be set so that the ground contact angle  $\beta$  of the upper edge 12 is approximately 45° when the snow surface is caught by both the corner portion 11' of the sole edge 11 and the corner portion 12' of the upper edge 12.

**[0022]** Although the example in which the side surface 13 of the snowboard 1 is formed on the same plane with the side surface 11b of the sole edge 11 is shown in FIGS. 3 and 4, it is also possible to form the side surface 13 of the snowboard 1 at a concave surface which is recessed deeper to the inside than the side surface 11b of the sole edge 11 as written in FIGS. 3 and 4 by a dashed line 13'. In so doing, the tendency for snow to adhere to the side surface 13 of the snowboard 1 reduces, and strong edging can be continuously performed.

**[0023]** Moreover, although the example in which the upper edge 12 protrudes higher than the upper surface 8 of the snowboard 1 is shown in FIG. 4, such a structure that the upper surface 8 of the snowboard 1 is elevated according to the upward tilting of the upper edge 12 as written in FIG. 4 by a dashed line 8' and thereby the upper edge 12 does not protrude higher than the upper surface 8 of the snowboard 1 is also possible.

**[0024]** Further, although the example in which the upper edge 12 is provided separately from the sole edge 11 is shown in any of FIGS. 2 to 4, it is also suitable to attach an edge member 15 to the side surface 13 of the snowboard 1, form the upper edge 12 in an upper portion of the edge member 15, and form the sole edge 11 in a lower portion thereof as shown in FIG. 5. As stated just above, the upper edge 12 and the sole edge 11 may be provided integrally.

**[0025]** Furthermore, although the example in which one upper edge 12 is provided above the sole edge 11 in any of FIGS. 2 to 5, two upper edges 15 and 16 may be provided above the sole edge 11, for example, as shown in FIG. 6, and three upper edges 15, 16, and 17 may be provided above the sole edge 11, for example, as shown in FIG. 7. In addition, four or more upper edges may be provided above the sole edge 11.

**[0026]** Moreover, the upper edge provided above the sole edge 11 may be shorter than or equal to the sole edge 11 in length. Further, it is also possible to change the angle of the upper edge depending on its position.

Furthermore, although the case where the binding 40 is attached to the upper surface 8 of the snowboard 1 by using the plural screw holes 9 provided in the upper surface 8 of the snowboard 1 is explained in FIG. 1, the present invention can be also applied to a case where the binding 40 is attached to the upper surface 8 of the snowboard 1 by using a rail provided on the upper surface 8 of the snowboard 1.

Industrial Availability

**[0027]** According to the present invention, it becomes possible to provide a snowboard whose edges are not released easily even when being strongly engaged and which are easy to operate, and consequently even a beginner can securely catch the snow surface and easily perform edging.

## Claims

1. A snowboard (1), comprising:

sole edges (11) provided along corner portions on both the left and right sides of a sliding surface (10)

**characterized in that**

left and right upper edges (12) are respectively provided above the left and right sole edges (11) so as to protrude more to the left and right sides of the snowboard (1) than the left and right sole edges (11), wherein the left and right upper edges (12) are tilted upward so that the ground contact angles ( $\beta$ ) of the left and right upper edges (12) become smaller than the ground contact angles ( $\alpha$ ) of the left and right sole edges (11).

## Patentansprüche

1. Snowboard (1) umfassend:

Sohlenkanten (11), die entlang von Eckbereichen an beiden Seiten, der linken und der rechten Seite einer Gleitfläche (10) vorgesehen sind,

**dadurch gekennzeichnet, dass**

linke und rechte obere Kanten (12) jeweils über den linken und rechten Sohlenkanten (11) vorgesehen sind, so dass sie etwas weiter zu der linken und rechten Seite des Snowboards (1) als die linke und rechte Sohlenkante (11) hervorsteht,

wobei die linke und rechte oberen Kanten (12) nach oben geneigt sind, so dass die Bodenkontaktwinkel ( $\beta$ ) der linken und rechten oberen Kanten (12) kleiner werden als die Bodenkontaktwinkel ( $\alpha$ ) der linken und rechten Sohlenkanten (11).

## Revendications

1. Planche de surf des neiges (1) comprenant :

des carres de semelle (11) prévues le long des parties de coin à la fois sur les côtés gauche et droit d'une surface de glisse (10),

**caractérisée en ce que :**

les carres supérieures gauche et droite (12) sont respectivement prévues au-dessus des carres de semelle gauche et droite (11) afin de faire davantage saillie sur les côtés gauche et droit de la planche de surf des neiges (1) que les carres de semelle gauche et droite (11), dans laquelle les carres supérieures gauche et droite (12) sont inclinées vers le haut de sorte que les angles de contact avec le sol ( $\beta$ ) des carres supérieures gauche et droite (12) deviennent plus petits que les angles de contact avec le sol ( $\alpha$ ) des carres de semelle gauche et droite (11).

FIG.1

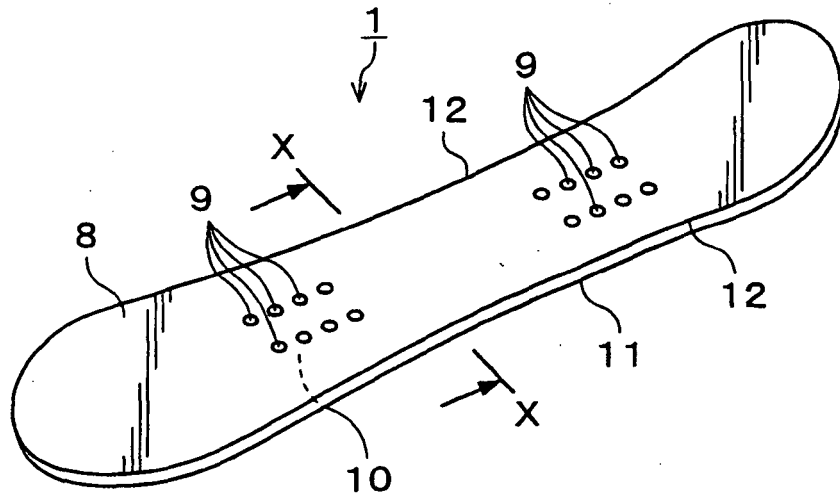


FIG.2

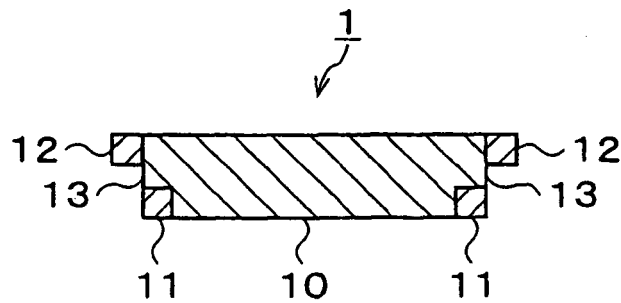


**FIG.3**

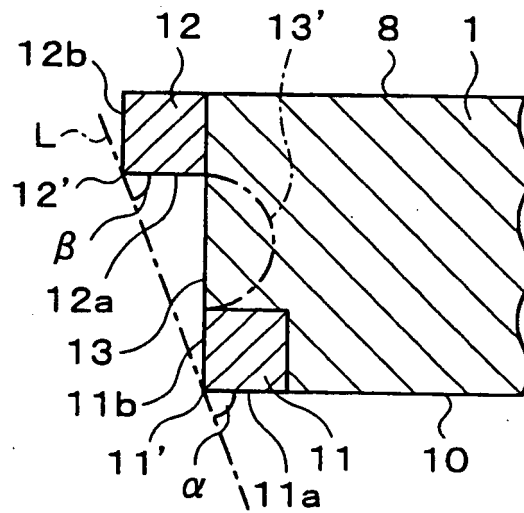


**FIG.4**

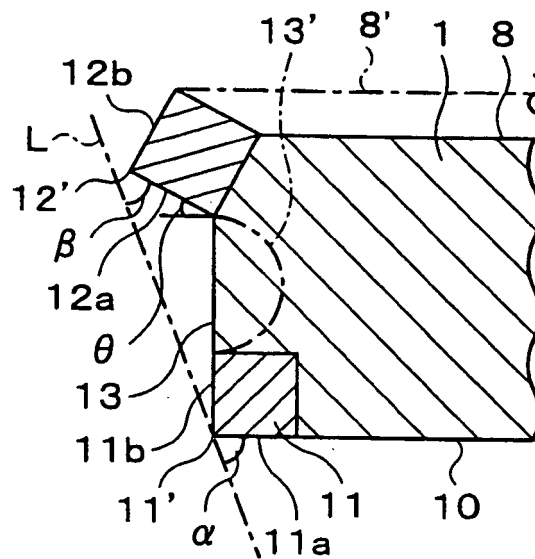


FIG.5

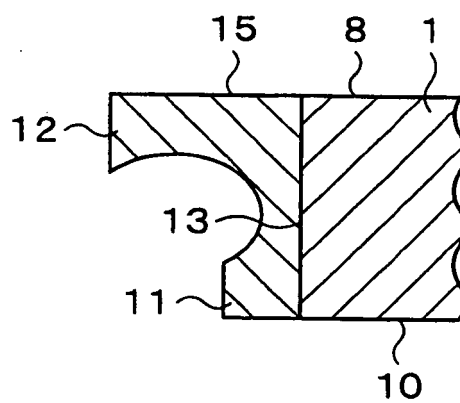


FIG.6

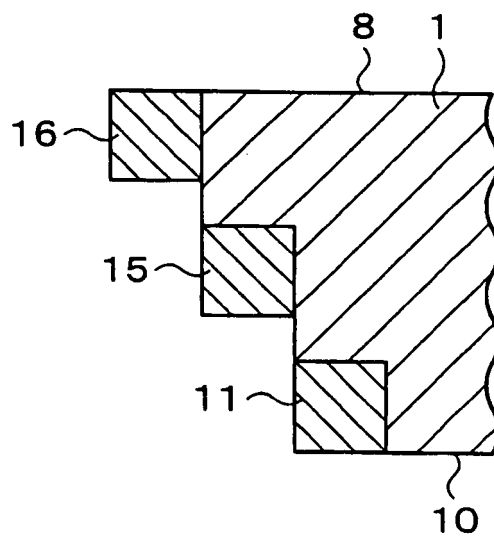
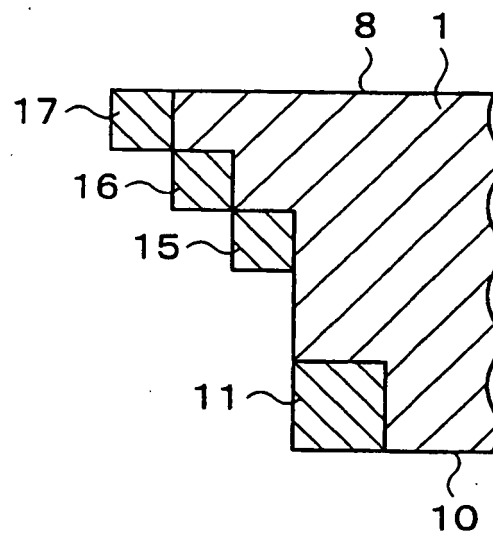


FIG.7



**REFERENCES CITED IN THE DESCRIPTION**

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