

United States Patent

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[54] SKI CONSTRUCTION
20 Claims, 1 Drawing Fig.

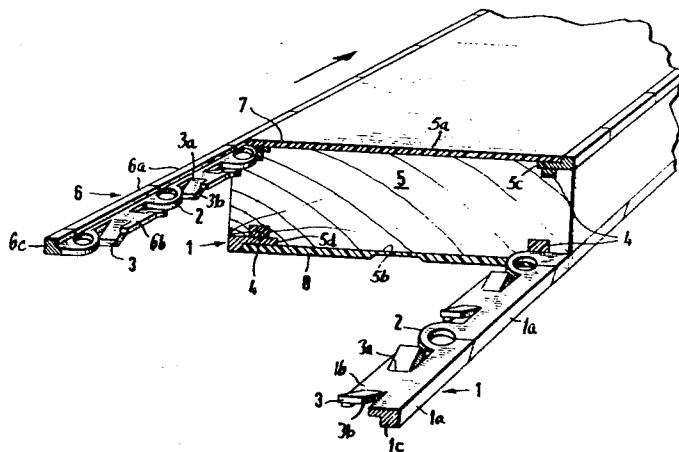
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[50] Field of Search..... **200/11.13**

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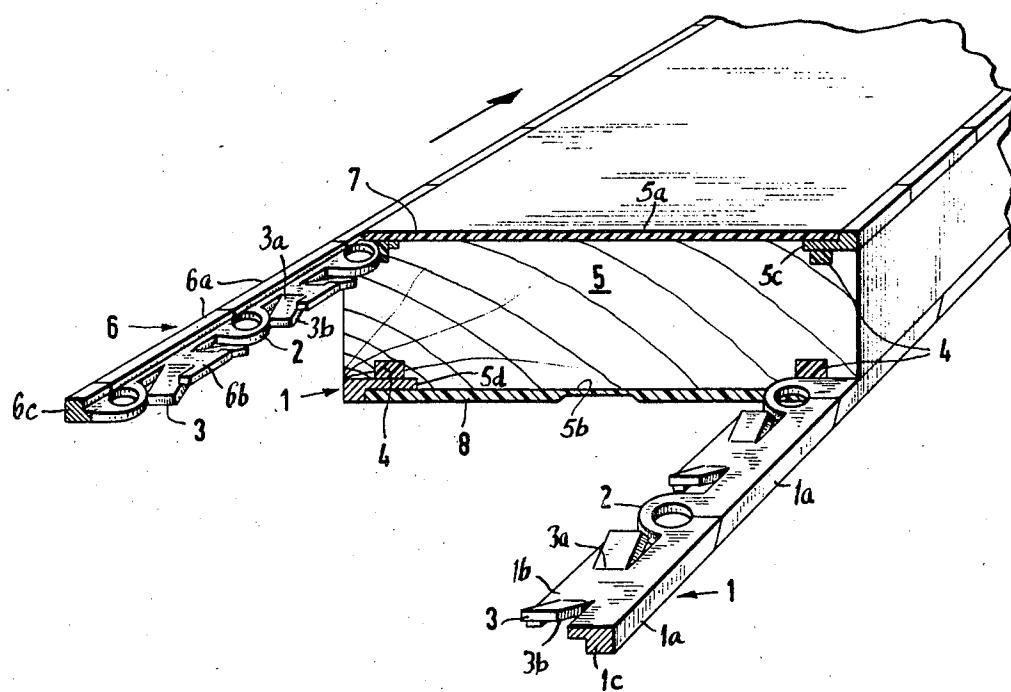
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ABSTRACT: An edge strip for a ski is formed of a plurality of separate segments interconnected by bridge pieces which extend, at least for a portion of their length, in a direction transverse to the longitudinal direction of the strip. The individual segments are fixed to the ski by means of tabs fitted into grooves in the body of the ski and the tabs are held within the grooves by an adhesive material.



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SKI CONSTRUCTION

SUMMARY OF THE INVENTION

The present invention is directed to an edge strip for a ski and, more particularly, it is concerned with a segmented edge strip with means formed from individual segments for fixing the strip to the ski.

At the present time, skis are available with continuous steel strips along the lower edges of the skis and continuous light metal strips along the upper edges of the skis. However, in such skis the differences in the coefficient of thermal expansion of the ski body and the edge strips causes uneven stressing of the skis and such stresses impair the riding properties of the skis and also shortens their useful life.

In the past, skis have been proposed which utilize segmented steel strips or edging set in the lower or snow-engaging surfaces of the skis. These strips are made up of separate pieces, and, as a result, have effected a substantial reduction in the stresses developed. However, in such skis, the aluminum strips extending along the upper edge surfaces of the skis have been continuous. In such a construction having continuous upper edge strips, it has been found that thermal expansion still causes considerable deformation of the ski body although the problem is not as serious as previously experienced. Moreover, the problems faced in positioning and attaching the multicomponent lower strip has resulted in an expensive construction in view of the number and close spacing of the attachment screws.

Another disadvantage of this construction is the increase in weight of the ski due to the number of attachment screws employed.

Another known ski construction has utilized edge strips along the lower surface of the ski consisting of individual segments separated by narrow transverse gaps and elastically interconnected by means of connecting pieces located within the body of the ski. In this arrangement, at least a portion of the length of the connecting pieces extend in a direction transverse to the longitudinal direction of the edge strip. While the construction has provided a continuous steel edging which is especially elastic in the longitudinal direction, the problem previously experienced in attaching the strips to the skis with a large number of screws has not been overcome. Moreover, the problems experienced due to temperature changes in the upper light metal or alloy edge strip still exists.

Accordingly, it is a primary object of the present invention to provide an edge strip for the upper surface of a ski which is formed of a plurality of separate segments spaced by narrow transverse gaps with the segments elastically interconnected by connecting pieces.

Another object of the invention is to provide means for securing the individual segments to the ski body without employing screws or similar attachment members.

Still, a further object of the invention is to provide an edge strip configuration which can be easily and securely attached to the ski body.

Another object of the invention is to afford a ski construction which is simple in arrangement, easy to produce, rugged in use, and overcomes the various problems of thermal expansion experienced in known ski constructions.

Therefore, in accordance with the present invention strips are provided for the longitudinal edges along the upper surface of a ski which are formed of a plurality of individual segments separated by narrow transverse gaps and elastically interconnected by the connecting pieces.

One feature of the connecting pieces is their orientation in a direction transverse to the longitudinal direction of the strip for at least a portion of their length. Additionally, a similar construction for the strip along the lower edges of the ski would be very advantageous. However, under certain conditions it may be advisable to form the strips along the lower edges as continuous members with only the strip along the upper edge being segmented.

In a preferred embodiment of the invention, which can be used either for the upper or lower edges of a ski, the individual segments of the edge strip have a L-shaped transverse section. One of the legs of the L-shaped section is longer than the other and extends in parallel relationship with the upper and lower surfaces of the ski. The connecting pieces are secured to the inner surface of the longer legs and extend in the plane of the longer legs inwardly into the body of the ski. For a portion of their length, the connecting pieces extend in a transverse direction relative to the longitudinal direction of the strips. Further, tabs are formed from the individual segments, such as by punching or stamping a portion of the longer leg so that the tab extends angularly from the surface of the longer leg of the segment. Grooves are formed in the body of the ski along the line of the edge strips and the tabs extend angularly into the grooves and are secured within them by means of a plastics material which is cast or molded *in situ*. With such a construction, the use of screws for attaching the edge strip to the ski is obviated and considerable advantages are gained both in the production of the skis and in the reduction of their weight.

It is preferably to provide the pieces interconnecting the individual segments with an arcuate shape so that they extend for at least a portion of their length in a direction transverse to the longitudinal direction of the strip.

While a single tab can be formed in each of the segments, it is preferable to provide a pair of tabs in each segment. Where one or a pair of tabs are used each tab is secured to the segment adjacent its longitudinal midpoint and extends angularly from its surface toward one of its ends. If a pair of tabs are used, the tabs slope from the surface of the segment, each toward an opposite one of its ends. With the tabs extending in opposite directions, a particularly satisfactory anchoring or attachment within the body of the ski is attained by means of the plastics material. An example of a plastics material suitable for securing the edge strips is an epoxy resin.

Though it is possible to provide the tabs on only certain of the segments, it is preferable to provide tabs on each of the segments so that they can be adequately anchored into the ski body.

For ease and simplicity in forming the tabs, they can be punched or stamped from the segments so that they extend angularly into the body of the ski. Moreover, the free ends of the tabs remote from their point of attachment to the segments should be located as close as possible to the ends of the segments. It is preferable if the tabs have a width or transverse dimension less than the width of the longer leg of the L-shaped strip so that the longer leg extends laterally on both sides of the tabs. With this construction, the lower leg extends in abutment with the body of the ski along each side of the groove. Due to this feature, the alignment of the strips along the edges of the skis is improved and a good connection is provided between the strips and the body of the ski.

The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, its operating advantages and specific objects attained by its use, reference should be had to the accompanying drawings and descriptive matter in which there is illustrated and described a preferred embodiment of the invention.

BRIEF DESCRIPTION OF THE DRAWING

65 The drawing is a perspective view partly in section of a portion of a ski embodying the present invention.

DETAILED DESCRIPTION OF THE INVENTION

In the drawing, a portion of a ski is shown with the arrow indicating its direction of forward travel. The ski is formed of a ski body 5 whose detailed construction is a matter of choice in accordance with the specific purpose for which the ski is utilized. Since the details of construction of the ski body are not significant with respect to the present invention, a further 75 description of the ski body is not considered necessary.

In its normal position of use, the ski body 5 has an upper surface 5a and a lower surface 5b. Each of the longitudinal edges of the upper surface 5a and of the lower surface 5b has a cutout portion 5c, 5d, respectively. Longitudinally extending grooves 4 are formed in each of the cutout portions 5c, 5d spaced laterally from the side surface of the ski and from the inner side of the cutouts. Along the upper surface 5a of the ski, an upper edge strip 6 extends along each edge within the corresponding cutout portion 5c. Similarly, a lower edge strip 1 extends along each edge of the lower surface 5b of the ski body 5 and fits within the corresponding cutout portion 5d. Preferably, the lower edge strips 1 are formed of steel and the upper edge strips are formed of a light metal alloy.

As can be noted from the drawing, the lower and upper edge strips 1 and 6 have the same configuration so that the description is the same for the upper and lower edge strips. Each edge strip is formed of a plurality of individual segments 1a, 6a of the same length which, for example, can be between 2 and 5 centimeters. A separation or discontinuity extends transversely of the segments. At the ends of each segment 1a, 6a, abutting another segment a connecting or bridge piece 2 elastically interconnects adjacent segments. As shown in the drawing, the connecting pieces 2 have an arcuate shape extending, at least for a portion of their length, transversely of the longitudinal direction of the strip and inwardly into the ski body 5. The arcuate configuration of the connecting pieces 2 provides them with a half ring-shaped appearance and in combination with the ends of the segments forms a rounded opening between adjacent segments.

The edge strips 1 and 6 have an L-shaped configuration comprised of a longer leg 1b, 6b and a shorter leg 1c, 6c. The longer legs 1b, 6b of the strips fit within the cutouts 5c and 5d along the upper and lower edges of the ski body 5. The exterior or wearing surface of the edge strips is provided by the exterior surfaces of the shorter leg 1c, 6c of the segments. After the upper edge strips 6 are fitted in position along the edges of the upper surface 5a of the ski body with their tabs 3 secured within the grooves, an upper covering layer 7 is placed on the upper surface 5a extending between the inwardly facing surfaces of the shorter legs 6c and situated over the upwardly facing surfaces of the longer legs 6b. Similarly, on the lower surface of the ski after the edge strips 1 are secured in place, a sole or running layer 8 is deposited on the lower surface 5b and extends between the inwardly facing surfaces of the shorter legs 1c and covers the downwardly facing surfaces of the longer legs 1b. Preferably, the running layer 8 and the upper covering layer 7 on the opposite faces of the ski body 5 are formed of a suitable plastics material.

As mentioned above, the grooves 4 extend longitudinally along the ski body 5 spaced closely inwardly from its side surfaces. To secure the strips to the ski body 5 without the use of screws the individual segments 1a, 6a are each provided with tabs 3 which extend into the grooves 4 when the strips are properly positioned along the edges. The tabs 3 are formed in the longer legs 1b, 6b of the edge strips, such as by punching or stamping. Each of the tabs 3 has a base portion 3a secured to the longer leg of the segment close to its longitudinal midpoint. While the tab is integral with the segment at its base 3a, the remainder of its periphery 3b is separated from the segment providing a free surface which extends into the groove 4. As can be seen from the drawing, the tabs 3 are spaced inwardly from both of the longitudinally extending edges of the longer legs 1b, 6b of the strip so that the inner portion of the longer legs 1b, 6b extend inwardly beyond the grooves 4 into contact with the surface of the ski body 5 within the cutout portion 5c, 5d. As a result, the longer legs 1b, 6b of the strips bear against the ski body on the opposite sides of the groove 4. Due to this arrangement, the tabs are fitted within the groove and adequate support and alignment for the strips is provided by the contact of the longer legs with the surface of the ski body 5. Since two tabs 3 are provided in each of the segments 1a, 6a, as shown in the drawing, they extend in opposite directions from the center toward the ends of the individual segments. In position within the grooves, the tabs are secured

in place by means of a suitable plastics material, such as an epoxy resin, which is cast or injected into the groove to produce a satisfactory connection between the metal of the edge strips and the wood or plastics material or other material which forms the body of the ski.

In the drawing, a preferred embodiment of the construction of the edge strips in the ski body is shown. However, modifications in the formation of the edge strips and the ski body can be easily made within the scope of the invention. For example, 10 additional tabs can be formed from the segments to improve the joining action between the strips and the ski body or single tabs can be formed in each segment adjacent segments having their tabs sloping in opposite directions. Moreover, it is also possible to provide the tabs in alternating ones of the segments 15 forming the edge strips. It can be readily appreciated from the drawing and the description of the ski, in accordance with the invention, that it is characterized by a high degree of flexibility and pliability so that thermal expansion or contraction of the edge strips does not have any harmful effect on the ski.

Another particular advantage of the construction disclosed 20 in the drawing is the arrangement of the tabs extending into the grooves 4 adjacent the ends of the individual segments whereby each segment is held securely within the ski body against dislodgement or displacement.

I claim:

1. An edge strip for a ski comprising an elongated strip 30 formed of a material stronger than the material forming the body of the ski to which the strip is to be affixed, said strip comprising a plurality of separate segments and a plurality of bridge pieces for interconnecting said segments, wherein each of said segments has an L-shaped transverse section and comprises a first leg and a second leg, said first leg is longer than said second leg and is adapted to be secured within the ski and said second leg is adapted to form an exterior edge surface for the ski, each said bridge piece is connected to the adjacent ends of a pair of said segments and extends for at least a portion of its length between said segments in a direction transverse to the longitudinal direction of said strip, and a tab 40 formed from and attached at one end thereof to said first leg on at least certain ones of said segments and the remainder of the body of said tab extends in angularly spaced relationship to said first leg from its position of attachment to said first leg in the longitudinal direction of said strip, and said tab is disposed at an acute angle to the surface of said first leg from which it extends.

2. An edge strip, as set forth in claim 1, wherein each said tab is adapted for engagement within the body of the ski and has a width less than the width of said first leg and each said tab has its longitudinally extending edges spaced inwardly from the longitudinally extending edges of said first leg.

3. An edge strip, as set forth in claim 2, wherein each said tab is integrally secured to said first leg near the longitudinal midpoint of said first leg and extends therefrom toward one of the transversely extending ends of said segment.

4. An edge strip, as set forth in claim 3, wherein said bridge pieces extend from said first legs of said segments and are secured to said first legs along the edge thereof remote from the juncture with said second legs.

5. An edge strip, as set forth in claim 4, wherein each said bridge piece has an arcuate shape and is integrally secured at its opposite ends to a pair of adjacent said segments.

6. An edge strip, as set forth in claim 3, wherein each said segment has a pair of said tabs and each tab of said pair extends toward an opposite end of said segment.

7. An edge strip, as set forth in claim 3, wherein said segments are formed of a light metal alloy.

8. An edge strip, as set forth in claim 3, wherein said segments are formed of steel.

9. A ski comprising a longitudinally extending ski body having an upper surface and a lower surface in its normal use position; said upper and lower surfaces each having a pair of spaced longitudinally extending edges, an elongated strip extending along each of the edges of said upper surface, each

said strip comprising a plurality of serially aligned separate segments and a plurality of bridge pieces for interconnecting adjacent said segments, wherein each of said segments has an L-shaped transverse section and comprises a first leg and a second leg, said first leg is longer than said second leg and is secured within said ski body and said second leg forms an exterior edge surface for the ski, a tab is formed from and is attached at one end to said first leg of each said segment and is engaged within said ski body, the remainder of the body of said tab extends in angularly spaced relationship to said first leg from its position of attachment thereto in the longitudinal direction of said strip and is disposed at an acute angle to the surface of said first leg from which it extends, said tab has a width less than the width of said first leg and has its longitudinally extending edges spaced inwardly from the longitudinally extending edges of said first leg, said tab is integrally secured to said first leg adjacent the longitudinal midpoint of said first leg and extends therefrom toward one of the transversely extending ends of said first leg, the upper surface of said ski body has openings formed therein and spaced inwardly from each edge thereof, said tabs formed on said segments are positioned within the openings in the upper surface of said ski body, and adhesive means within the openings secure the tabs therein.

10. A ski, as set forth in claim 9, wherein each said segment has a pair of said tabs and each tab of said pair extends toward an opposite end of said segment.

11. A ski, as set forth in claim 9, wherein said segments are formed of a light metal alloy.

12. A ski, as set forth in claim 9, wherein an upper covering layer is deposited on the upper surface of said ski body and extends between the surfaces of said segments defining the opposite edge surfaces along the upper surface of said ski.

13. A ski, as set forth in claim 9, wherein the openings in the upper surface of said ski body comprise a pair of longitudinally extending grooves, each of said grooves is spaced closely inwardly from a different one of the sides of said ski body and extends in the longitudinal direction thereof, said grooves each have a width which is less than the length of said first legs in the transverse direction of the ski so that first legs extend inwardly beyond the inner limit of said grooves whereby said first legs extend transversely across said grooves.

14. A ski, as set forth in claim 9, wherein said bridge pieces extend from said first legs of said segments and are secured to said first legs along the edge thereof remote from the juncture of said first and second legs.

15. A ski, as set forth in claim 14, wherein each said bridge

piece has an arcuate shape and is integrally secured at its opposite ends to a pair of adjacent said segments.

16. A ski comprising a longitudinally extending ski body having an upper surface and a lower surface in its normal use position, said upper and lower surfaces each having a pair of spaced longitudinally extending edges, an elongated strip extending along each of the edges of said lower surface, each said strip comprising a plurality of serially aligned separate segments and a plurality of bridge pieces for interconnecting

10 adjacent said segments, wherein each of said segments has an L-shaped transverse section and comprises a first leg and a second leg, said first leg is longer than said second leg and is secured within said ski body and said second leg forms an exterior edge surface for the ski, a tab is formed from and is attached at one end to said first leg of each said segment and is engaged within said ski body, the remainder of the body of said tab extends in angularly spaced relationship to said first leg from its position of attachment thereto in the longitudinal direction of said strip and is disposed at an acute angle to the

15 surface of said first leg from which it extends, said tab has a width less than the width of said first leg and has its longitudinally extending edges spaced inwardly from the longitudinally extending edges of said first leg, said tab is integrally secured to said first leg adjacent the longitudinal midpoint of said first leg and extends therefrom toward one of the transversely extending ends of said first leg, the lower surface of said ski body has openings formed therein and spaced inwardly from each edge thereof, said tabs formed on said segments are positioned within the openings in the lower surface of said ski body, and adhesive means within the openings secure the tabs therein.

20 17. A ski, as set forth in claim 16, wherein a lower covering layer is deposited on the lower surface of said ski body and extends between said segments forming the said strips along the opposite edges of said ski.

25 18. A ski, as set forth in claim 16, wherein said bridge pieces extend from said legs of said segment and are secured to said first legs along the edge thereof remote from the juncture of said first and second legs, and each said bridge piece has an arcuate shape and is integrally secured at its opposite ends to a pair of adjacent said segments.

30 19. A ski, as set forth in claim 16, wherein each segment has a pair of said tabs and each tab of said pair extends toward an opposite end of said segment.

35 20. A ski, as set forth in claim 16, wherein said segments are formed of a light metal alloy.