Aug. 9, 1938. C. G. SUITS 2,126,152

SKI

Filed June 26, 1935

Fig. 1.

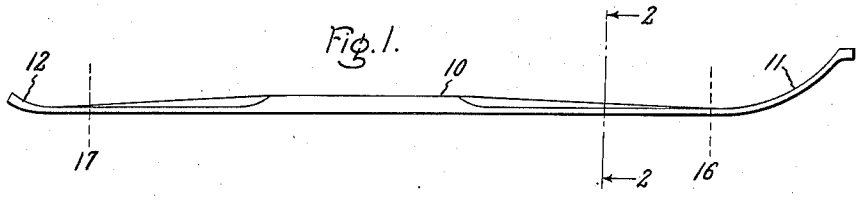


Fig. 2.

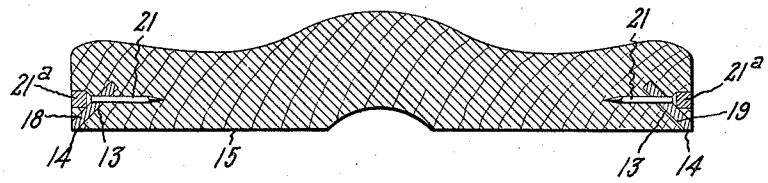


Fig. 3.

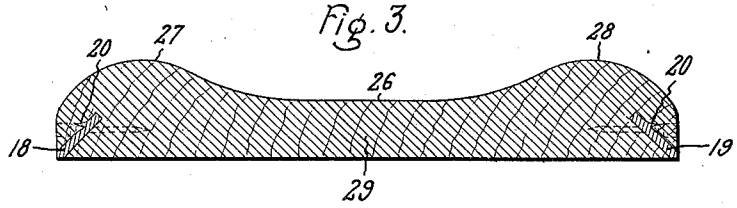
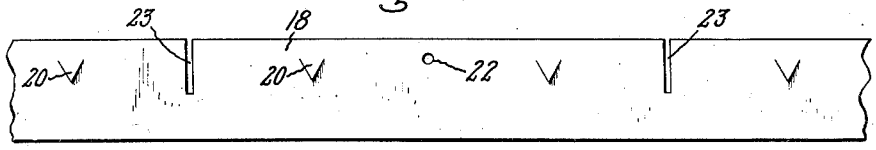


Fig. 4.



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UNITED STATES PATENT OFFICE

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SKI

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7 Claims. (Cl. 280—11.13)

My invention relates to skis, more particularly to the provision of simple, reliable and inexpensive wear-resistant running edges for the skis to increase their useful life.

Heretofore various proposals have been made to improve the wearing qualities of skis. However, much is yet to be desired in providing skis with reinforced running edges which do not slow down the skis and which do not change the flexibility of the skis. For example, relatively thick metal strips have been applied to the edges of skis to prevent wear, the strips being secured to the skis by means of thirty or more screws per ski. After a period of usage the screws loosen and it is extremely difficult and quite costly to re-secure the strips to the skis without greatly slowing down the skis.

In carrying out my invention in one form thereof, I reinforce the running edges of the skis by means of relatively thin inserts formed of wear-resistant material, which inserts are embedded in the body of each ski, with only the thin edges thereof exposed at opposite corners of each ski. The inserts are cemented within slots extending diagonally from the running edges of the skis. For additional fastening means, pins are driven from one edge of the ski through the insert and into the body of the ski.

For a more complete understanding of my invention, reference should now be had to the accompanying drawing wherein I have shown in Fig. 1 an elevation of a ski embodying my invention; Fig. 2 is a sectional elevation taken on the lines 2—2 of Fig. 1; Fig. 3 is a sectional elevation of a modified form of my invention, while Fig. 4 is an enlarged plan view of an insert constructed in accordance with my invention.

Referring to the drawing, I have shown my invention in one form thereof applied to a ski 10 provided with the usual curved leading end 11 and a slightly curved trailing end 12. In manipulating the skis, particularly in taking sharp curves at high speed or in braking, the degree of control is largely dependent, aside from the skill of the skier, on the sharpness of the edges of the ski. I have found that when the snow is in a hard, packed, or icy condition, the wear on the edges occurs at such a rate that virtually all control of the skis is lost after approximately two days use. This is true even though the skis are made of the highest grade of materials obtainable. In order greatly to diminish, if not entirely to prevent, this excessive wear, I provide each ski with slots or grooves 13 extending diagonally from the running edges 14 into the body or body portion of the ski at an angle of approximately 40 degrees from the running surface 15. Although I prefer the 40 degree angle, it is to be understood that slots at an angle of from 10 to 70 degrees, inclusive, come within the scope of my invention, these slots preferably extending along the running surface from a point 16 which starts approximately at the beginning of the curved leading end 11 and terminates at a point 17 just short of the trailing end 12.

Into the diagonal slots at the respective edges of the skis, I force, by pounding or pressing, inserts 18 and 19 formed of a suitable wear-resistant material such, for example, as steel, cold rolled or stainless, aluminum, a selected one of the aluminum alloys, Bakelite, brass or Celluloid. I prefer, however, to utilize an alloy of aluminum now available on the market and known to the trade as "Duralumin", the strip of Duralumin being approximately sixty-five mils (.065") in thickness and approximately five-sixteenths of an inch ($\frac{5}{16}$") in width. The length of the insert or the distance between the points 16 and 17 may vary but is ordinarily approximately 48". Besides the Duralumin I have found that inserts of stainless steel of the same length and width and having a thickness of forty mils (.04") are entirely satisfactory. If Bakelite or other phenolic condensation product is used, the thickness should be increased to 100 mils (.100").

In order to prevent warping or widening of the slots due to absorption of water by the unprotected surfaces of wood, I seal the surfaces of the slots by means of a waterproofing fluid. Preferably, a waterproof cement is used which adheres equally well with the metal and the wood and which performs the double function of waterproofing the slots and of locking the inserts in the slots. I also provide a series of tangs or burs 20 along the upper edges of the inserts, each tang being directed downwardly towards the bottom of the ski or in a direction to oppose movement of the insert from its slot. The tanks 20, while they may be struck from one side of the insert to the other, are preferably formed by driving a sharp-edged tool or cold chisel into the inserts.

If the ski is to be used under severe operating conditions, it is desirable to drive pins 21 inwardly from the sides of the ski through holes 22 drilled in the inserts after they have been cemented in their slots. The pins 21 are countersunk in the ski and covered with a plastic compound 21a including wood as a filler. It will be seen that these pins rigidly and securely hold

the inserts in place and prevent their dislodgment. In this connection it will be noted that in taking turns the forces on the inserts will always be directed outwardly from the center of the ski or towards the edges thereof. Consequently, if a substantial portion of the inserts were exposed the force applied to them would soon loosen the inserts and, of course, greatly interfere, if not prevent, travel.

However, by embedding the strip-like inserts in the slots the only exposed portion of the inserts is that which forms the edges of the ski. The major portion of the inserts are entirely surrounded by and are cemented to the ski as well as being mechanically interlocked thereto by means of the tangs **20** and the pins **21**.

In order to minimize the change in the natural resiliency of the ski due to the introduction of the inserts **18** and **19**, each insert is provided with slots **23** located at intervals of about six inches and alternating with the tangs **20** and holes **22** provided for the pins **21**. Preferably, the slots **23** extend substantially to the mid-portion of the inserts.

In cases where the skis are designed for minimum weight it is desirable to vary the width of the inserts with the thickness of the skis. For example, they may vary in width from one-quarter of an inch (¼") at their respective ends to approximately five-sixteenths of an inch ($\frac{5}{16}$") at their center.

I have found that skis constructed in accordance with my invention can be used throughout the entire season under severe skiing conditions without loss of the sharp running edges of the skis. After a considerable period of use, the wood adjacent the insert may wear away to a slight extent. With Duralumin inserts the wear and coefficient of friction are substantially the same as for the ski. When the ski wears away faster than the insert, it is only necessary to file down the insert a slight amount. In this manner the edges of the skis are sharpened and returned to their original condition. Since the inserts lie diagonally in the ski, the exposed edge of each insert is beveled to a sharp knife-like edge which is easily re-sharpened and is vastly superior to an edge of wood.

Referring to Fig. 3, I have found it desirable to modify the construction of the ski for the sake of longer ski life and a greater ski strength. Accordingly, the skis are constructed by providing each ski with a concave section **26** on the upper side thereof, the upper outside portions **27** and **28** of the ski being of greater thickness than the central portion **29** and rounded towards the outer edges of the ski. By means of this construction, the cross sectional areas adjacent the inserts **18** and **19** are increased to provide greater strength against breakage of the ski. It will be understood that the cross sections are of the same general shape on both the front and rear portions of the ski, the usual flat central portion being provided for the attachment of the ski harness. Similarly, the ski shown in Figs. 1 and 2 is provided with outer edges of greater thickness than the portions intermediate the center and edges of the ski.

While I have shown particular embodiments of my invention, it will be understood, of course, that I do not wish to be limited thereto since many modifications may be made, and I, therefore, contemplate by the appended claims to cover any such modifications as fall within the true spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:—

1. The combination with a ski having a body portion and a substantially flat running surface, of flat metallic inserts therefor having narrow slots extending from one edge toward the other edge and fastening tangs intermediate opposite edges thereof, said ski intermediate the leading and trailing ends of said surface being provided with slots extending diagonally from the running edges thereof into said body portion of said ski, and means for securing said inserts within said slots, so that neither of the ends and only one edge of the insert is exposed.

2. The combination with a ski, having a body portion and a running surface, of flat inserts formed of an alloy of aluminum therefor, said inserts having narrow slots spaced along its length and extending from one edge toward the other edge thereof, said ski being provided with slots substantially parallel walls of which extend diagonally from the running edges thereof into the body portion of said ski, and means for securing said inserts within said slots comprising tangs extending from said inserts outwardly of said slots and into said walls, and pins extending from the sides of the ski, through said inserts, and into the body portion of the ski.

3. The combination with a ski having a body portion and a running surface, of flat inserts formed of stainless steel therefor, said inserts having narrow slots spaced along its length and each extending from one edge toward the opposite edge thereof, said ski being provided with slots substantially parallel walls of which extend diagonally from the running edges thereof into the body portion of said ski, and means for securing said inserts within said slots comprising tangs extending from said inserts outwardly of said slots into said walls, and pins extending from the sides of the ski through said inserts into the body portion of the ski.

4. The combination with a ski having a body portion and a running surface, of flat metallic inserts therefor provided with tangs intermediate the edges and extending toward one edge thereof, said ski being provided with slots the walls of which extend diagonally from the running edges thereof into the body portion of said ski, said slot being of substantially the same thickness as said inserts so that when said inserts are driven into said slots said tangs engage said walls of said slots to hold securely said inserts in place, and means minimizing change in the natural resiliency of said ski due to said inserts comprising a series of narrow slots extending from the upper edge of said inserts toward the exposed edge thereof.

5. The combination with a ski having a body portion and a running surface, of flat metallic inserts therefor provided with tangs extending toward an edge thereof, said ski being provided with slots the side walls of which extend diagonally from the running edges thereof into the body portion of said ski, said slots being of substantially the same thickness as said inserts so that when said inserts are driven into said slots said tangs engage said side walls of said slots to hold securely said inserts in place, and pins extending from the edge of said ski adjacent said inserts into said body portion of said ski and forming an interlocking connection with said inserts, said inserts having a plurality of narrow slots each extending inwardly from the exposed edge thereof to minimize change of the

natural resiliency of the ski due to the presence of said inserts.

6. A ski comprising a body portion and a running surface, said ski being formed with recesses disposed in the body portion the walls of which are parallel with lines extending from the respective edges of said running surface into the body portion thereof, preformed inserts formed of flat strips of wear-resistant material, substantial portions thereof disposed within said recesses, said portions of said inserts forming acute angles with said running surface, each of said inserts having narrow slots extending from an upper edge toward its lower and exposed edge, and means for interlocking said inserts with said body portion of said ski, firmly to secure them within said recesses.

7. As an article of manufacture, a ski having a curved leading end and a substantially flat running surface, said ski being provided with recesses, the major wall-portions of which are disposed along diagonal lines which extend from the edges of said running surface into the body of said ski, the lengths of said recesses along said ski being less than the length of said running surface, wear-resistant inserts tightly fitting within said recesses, a portion of said inserts forming the major portions of the running edges of said ski, each of said inserts being provided with a series of slots extending from its upper edge substantially to the center of said insert, and means including tangs integral with said inserts and extending into said wall-portions and alternating with said slots for interlocking said inserts and said body of said ski.

CHAUNCEY G. SUITS.