

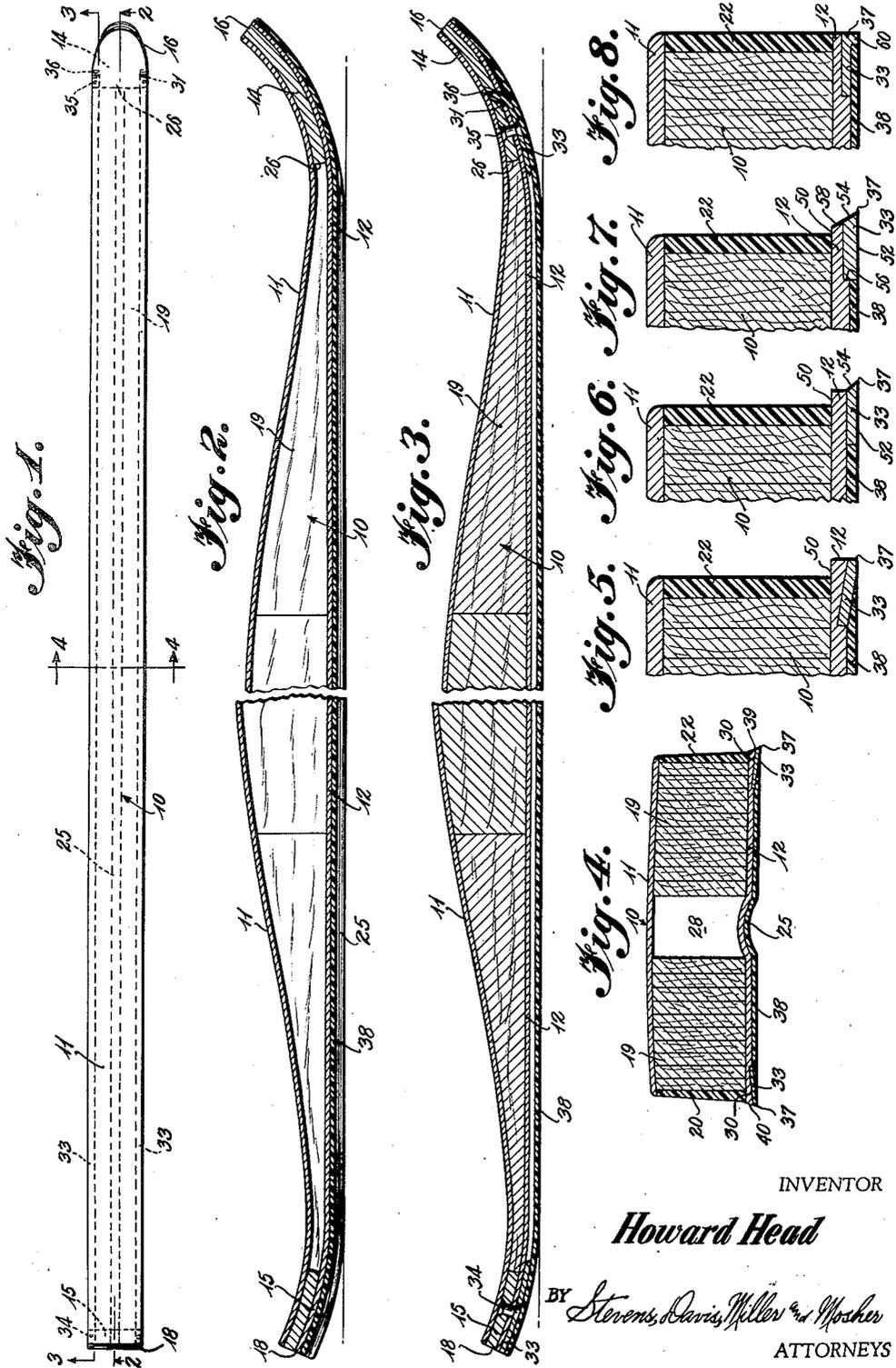
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COMPOSITE WOOD AND METAL SKI HAVING PLASTIC RUNNING SURFACE

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## COMPOSITE WOOD AND METAL SKI HAVING PLASTIC RUNNING SURFACE

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This invention relates to skis and more particularly to an improvement in the type of ski as shown in Patent No. 2,525,618 to Wayne M. Pierce, Jr., issued October 10, 1950.

The ski of the prior art patent above-mentioned is made of a laminated construction.

It is an object of this invention to produce a ski of low cost and high quality and to provide a ski having light metal top and bottom facing sheets which is characterized by excellent resistance to wear on the part of the lower facing sheet.

It is further proposed, according to this invention, to provide sharp edges on the lower facing sheet which are themselves resistant to wear and to hold those edges in position by means which contribute to the strength and resilience properties of the ski as a whole.

Other objects and advantages of the present invention will readily become apparent from a detailed consideration of the following description when taken in conjunction with the accompanying drawing in which:

Figure 1 is a top plan view of the new and improved ski construction of the present invention;

Figure 2 is a view in vertical section through the center of the ski taken along line 2—2;

Figure 3 is a view in vertical section through a side of the ski taken along line 3—3;

Figure 4 is a view in vertical section of the middle of the ski taken along line 4—4 showing the edge construction;

Figure 5 is a view similar to Figure 4 showing a modification of the edge construction;

Figure 6 is also view similar to Figure 4 illustrating another modification of the edge construction;

Figure 7 is also a view similar to Figure 4 showing still another modification of the edge construction; and

Figure 8 is also a view similar to Figure 4 showing still a further modification of the edge construction.

Referring now to the drawings, Figures 1 to 4 show in detail the new and improved ski. It includes a contour-forming core sheet generally indicated at 10, top and bottom facing sheets 11 and 12 respectively, and metal inserts 14 and 15 at the tip 16 and rear 18 of the ski, respectively.

The contour-forming core sheet 10 is fabricated from a plurality of adhesively connected sections 19 of edge-grain plywood or the like, having a thickness along the grain equal to the space between the top and bottom facing sheets 11 and 12. The core 10 also has side strips 20 and 22 which extend along the side edges of the core sheet. In this manner the relatively light plywood sections 19 are protectively enclosed on both sides. Additionally, the top and bottom facing sheets 11 and 12 cover the upper and lower surfaces of the core sheet 10 and metal inserts 14 and 15 enclose the ends thereof. Consequently, the sections 19 are completely encased by harder and more wear-resisting materials. The strips 20 and 22 are preferably formed of a phenolic resin material having good wear-resisting quality.

The top and bottom facing sheets 11 and 12 are preferably thin sheets of hard aluminum alloy which are adhesively secured to the upper and lower surfaces of the core sheet 10. The bottom facing sheet 12 has a longitudinal flute or groove 25 formed therein which extends from a point 26 rearwardly to the end of the ski. The groove 25 gives directional stability to the ski. The core sheet 10 is provided with a slot 28 cut therein

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from point 27 at the rear end forward to point 26. The groove 25 projects into this slot 28.

Along each side of the bottom facing sheet 12 is a shallow inclined cut-out. This is shown as 30 in Figure 4. These cut-outs extend from a point 31 near the tip 16 rearwardly to the end of the ski. As indicated, each of the cut-outs starts at the lowest edge 39 of bottom facing plate 12 and progresses into the plate 12 at a slight angle. For each cut-out, a piece is removed from the plate 12 having as its cross-sectional configuration a right triangle. A steel strip 33 fits into each cut-out 30. Each strip 33 is securely anchored at the rear end of the ski by means of a rivet 34 passing through metal insert 15, bottom facing plate 12, and strip 33. At the forward end, each of the strips is similarly anchored by means of a rivet 35 passing through metal insert 14, bottom facing plate 12, and strip 33. The bottom facing plate 12 and metal insert 14 are cut upon each side with an inclined slot 40 to receive the extreme forward tips 36 of the strips 33. The bottom 38 of the ski is covered with a phenol-formaldehyde resin at a depth sufficient to cover all but the outside edges 37 of the strips 33.

The bottom facing sheet 12 is slightly wider than the top facing sheet 11 and the strips 20 and 22 are beveled inwardly and upwardly at a small angle. In view of the fact that the edges 40 of bottom facing plate 12 are also beveled, the uncovered edges of the strips 33 can be kept sharp by filing.

In making the ski, a groove or flute is longitudinally formed in a thin sheet of aluminum alloy. The groove is arranged in the lower surface of the sheet and opens downwardly. The upper surface is correspondingly provided with a bubble as a result of the groove formation. The edges at the lower surface of the sheet are cut-out so that they are adapted to receive steel strips in the manner previously indicated. Aluminum alloy inserts are then adhesively secured to the upper surface of the sheet at its front and rear ends. The assembly constituting the sheet and front insert is diagonally slotted on each side. A steel strip is positioned in each cut-out in the edges of the sheet and is adhesively secured therein. Each of these strips is held at the rear of the sheet by means of a rivet passing through the insert, sheet, and strip. At the forward end of the sheet the strip is similarly held by means of a rivet passing through the insert, sheet, and strip. The front tip of each strip is positioned in its corresponding diagonal slot in the insert and sheet. The lower surface of the sheet is then coated with a suitable phenolic resin.

The core sheet is formed from edge-grain plywood or other suitable material. The plywood is adhesively secured to a suitable phenolic resin board. This assembly is cut into two matching pieces each of which is thick in the center and tapered toward either end. The foregoing operation is performed so that a strip from the phenolic resin board forms one side of each piece.

The ski is finally assembled in a suitable mold in the following manner. The sub-assembled aluminum alloy sheet is positioned in the mold. The two matching pieces which are the contour-forming core sheet are placed on the upper surface of the sheet. One piece is placed on either side of the projecting bubble. A second aluminum alloy sheet is positioned on top of the two matching pieces. The upper surface of the sub-assembled sheet, the lower surface of the second sheet, and the surfaces of the two matching pieces are all coated with a suitable adhesive prior to their positioning for final assembly as above described. When all parts of the ski are prepared and positioned, the mold is closed. The assembly is subjected to suitable heat and pressure until the parts of the ski are securely bonded to each other. The ski is then put through a finishing operation which includes beveling the side strips 20 and 22 to a slight angle.

In Figure 5 is shown a modification wherein the side strips 20 and 22 are not beveled but rather are straight. This construction provides a projected lower edge which permits resharpening by filing. This is accomplished by having the bottom facing sheet 12 larger

than the top sheet 11 by an amount 50. The steel strips 33 are positioned in sheet 12 and the bottom 38 covers all but edge 37 in the same manner as before. The core sheet is indicated at 10.

A further modification is shown in Figure 6. Here the side strips 20 and 22 are straight and the bottom facing sheet 12 is larger than the top sheet 11 by an amount 50 as in Figure 5. However, the bottom coating 38 and the strips 33 are arranged coplanar. In this construction the complete bottom surface 52 of strip 33 constitutes part of the running surface of the ski. The edge 37 of strip 33 projects beyond the end of sheet 12. The side 54 of strip 33 is beveled inwardly so that it will present a sharp edge 37.

In Figure 7 a further modification is shown wherein the strip 33 is set into sheet 12. In this construction, the arrangement is similar to Figure 6 except that strip 33 is fitted into a cut-out in sheet 12 represented by 56. Additionally, the side 58 of sheet 12 is beveled to form an extension of the side 54 of strip 33.

A still further modification is shown in Figure 8. In this construction the top and bottom facing sheets 11 and 12 are of equal width. The strips 20 and 22 are straight and lie between the transverse ends of the sheets. The lower edges of bottom sheet 12 are cut-out deep enough to receive strips 33. A projecting ridge 60 is provided along the outside edge of each strip 33. The ridge 60 is of a thickness equal to the thickness of bottom coat 38. The edge 37 of ridge 60 becomes the biting edge in this construction.

While this invention has been shown and described in conjunction with specific embodiments, it is nevertheless to be understood that various changes and modifications obvious to one skilled in the art are within the spirit, scope and contemplation of the present invention.

I claim:

1. In a laminated ski including an upper and a lower facing sheet having a core material disposed therebetween the improvement that comprises a pair of strips of hard material, one face of one of said strips secured along one bottom edge of said lower facing sheet, one face of the other of said strips secured along the other bottom edge of said lower facing sheet, and a coating on the bottom of said lower facing sheet covering a substantial portion of the other faces of said strips but leaving exposed a portion of each of said strips, said coating functioning as the running surface of the ski, said exposed portions constituting corners of the ski and presenting sharp biting edges.

2. In a laminated ski as defined in claim 1 the further improvement of said strips being of metal harder than the metal of said facing sheets.

3. In a laminated ski as defined in claim 1 the further improvement of the bottom of said lower facing sheet

being marginally grooved and said strips being set into said marginal grooves.

4. In a laminated ski as defined in claim 3 the further improvement of said marginal grooves being diagonal to the plane of the surface of said lower facing sheet.

5. In a laminated ski as defined in claim 1 the further improvement of said strips being bonded to the bottom edges of said lower facing sheet.

6. In a laminated ski as defined in claim 1 the further improvement of said lower facing sheet being slotted on each side adjacent the tip of the ski, said strips passing through said slots and the front ends of said strips being fixed internally of said ski.

7. In a laminated ski as defined in claim 6 the further improvement of means to fix the back ends of said strips adjacent the rear of the ski.

8. A bottom and edge construction for a ski that comprises a metal facing sheet, a pair of strips of hard material one face of one of said strips secured along one bottom edge of said facing sheet, one face of the other of said strips secured along the other bottom edge of said facing sheet, and a coating on the bottom of said facing sheet covering a substantial portion of the other faces of said strips but leaving exposed a portion of each of said strips, said coating functioning as the running surface of the ski, said exposed portions constituting bottom corners of the ski and presenting sharp biting edges.

9. A bottom and edge construction for a ski as defined in claim 8 wherein the bottom of said facing sheet is marginally grooved and said strips are set into said marginal grooves.

10. A bottom and edge construction for a ski as defined in claim 9 wherein said marginal grooves are formed diagonally to the plane of the surface of said facing sheet.

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