

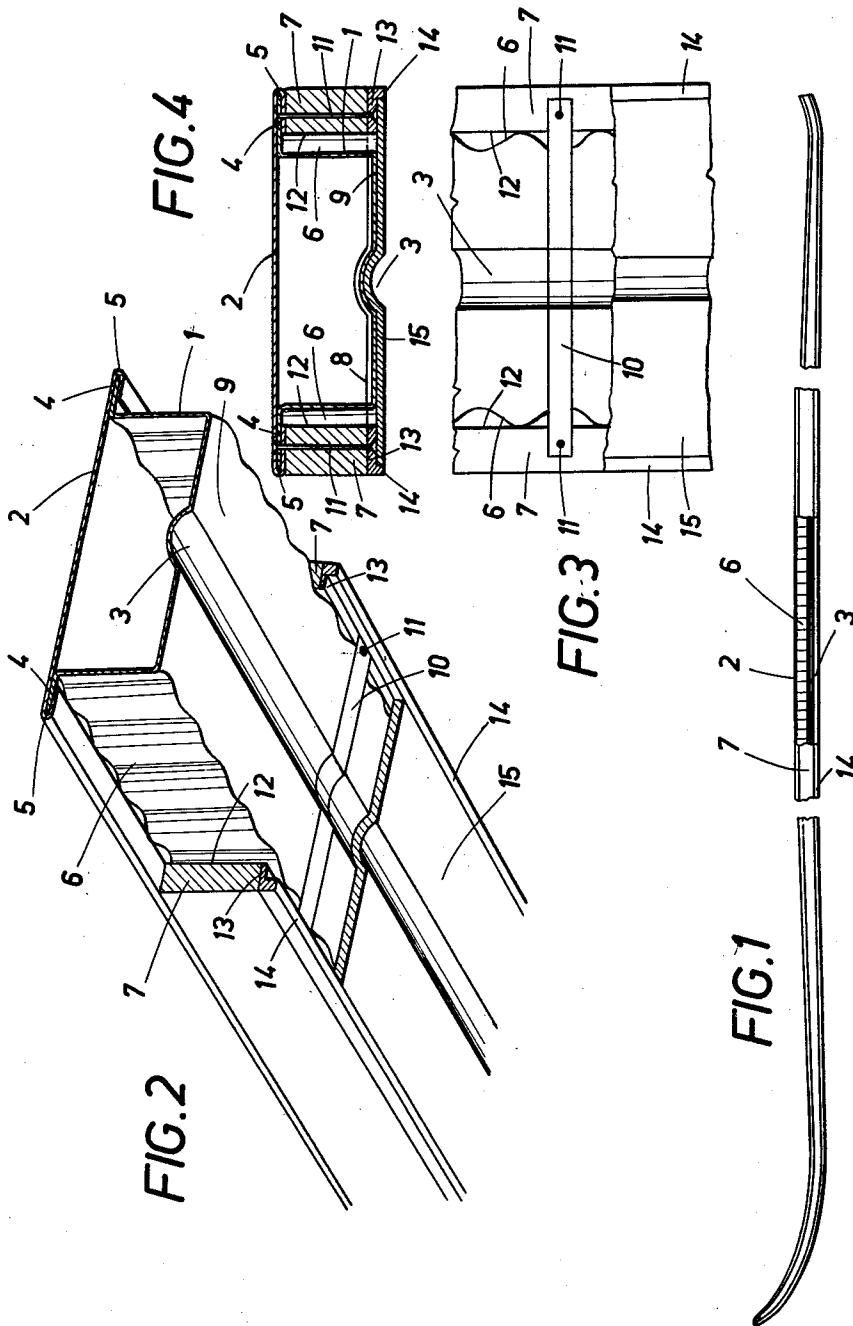
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METAL SKI

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1

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METAL SKI

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This invention relates to a metal ski, which consists of two metal sections which are combined to form a generally box-shaped section. In almost all known skis of this type, the box section contains a spring insert, which imparts the necessary strength to the ski. This spring insert may consist of a plurality of leaf springs superimposed to form a spring set, or of a spring leaf which is formed with a plurality of undulations consecutively extending in the direction of the length of the strip and having top and bottom crests which engage the opposite walls of the ski section. To provide a ski having the necessary elasticity, the box section may be provided with a wooden insert, which has a resilient and, at the same time, damping action. This shows that in the known metal skis, different functions are performed by separate parts. The box section itself is intended to impart to the ski the necessary stability and, particularly, resistance to torsion, whereas the spring is provided to obtain a certain elasticity. Normal box sections, however, have a high inherent rigidity and a considerable resistance to deflection so that the springs that are provided can hardly be effective. On the other hand, if the box section is constructed to provide for a certain freedom of relative movement between its component sections, this will enable the provision of a ski having desirable elastic properties, but the ski will lack the necessary torsion resistance and will tend to flutter. A ski has been disclosed in which two U-shaped metal sections are nested one in the other and the top section is supported by leaf springs on the bottom section. In this ski, the nesting provides for a freedom of vertical movement between the top section, which carries the binding, and the bottom section, which carries the tread. In addition to the low torsion resistance, which results in fluttering of the ski, as has been mentioned, such a ski has also the disadvantage that the curvature of the tread remains virtually constant. Whereas changes in the loading of the ski will result in a change of the distance between the two sections, the change in the position of the top section will not result in a deflection of the lower section. A ski which cannot be properly deflected, however, is not suitable for modern skiing. Besides, the springs result in a considerable increase in weight. Many metal skis of said type do not even permit of a reinforcement of the tread edges whereas sharp edges are essential for modern skiing.

All these disadvantages are eliminated by the invention. The same relates to a metal ski of the type defined first hereinbefore and resides essentially in that the section comprises a bottom part, which is approximately U-shaped in cross-section, and a platelike top part, which is connected to outwardly angled edge flanges of the bottom part to form side ledges that protrude on both sides beyond the box, the upright side walls of the bottom part being formed as far as to the underside of the web thereof with undulations extending transversely to the longitudinal direction. Edge strips which cover the side walls and carry on the underside a reinforcing edge member are preferably secured to the side ledges.

The design according to the invention retains all advantages of a ski body consisting of a closed box section. These advantages include particularly the high torsional strength, which prevents fluttering. Nevertheless, the undulations of the side walls will impart a sufficient flexibility to the ski because the undulated side walls can be

2

vertically deflected more easily than before, whereby the undulations in the tension zone, which is disposed on the underside of the ski, are pulled apart and slightly flattened whereas in the compression zone, which is reinforced by the side ledges, there is practically no deformation. When manufactured from resilient material, the side walls constitute at the same time the spring elements which return the ski to its initial shape when relieved. Depending on the selected material and the wall thickness, an additional spring is not required in many cases. By a variation of the depth of the undulations and of the height of the side walls, any portion of the ski may be provided with the elastic properties desired for it. The edge strips cover the undulations of the side walls and, if made from appropriate material, may be used as additional spring and/or damping elements. They enable also the provision of a proper and effective edge reinforcement. A particular degree of unsusceptibility to temperature fluctuations, moisture etc. and a considerably low maintenance requirement is imparted to the ski if the edge strips are made from flexible light metal, preferably from hard aluminium.

In order to provide a sufficiently rigid ski body, which is unmovable, particularly in the transverse direction, the invention provides further to interconnect the two edge strips adjacent to the tread-forming web of the bottom section by spaced ties. Whereas these ties may extend above the web through openings in the side walls of the bottom part, it is much simpler to connect the edge strips below the web. In the latter case, the ties, consisting in most cases of bands, are received in transverse grooves formed in the web of the bottom part. The edge strips may be fastened by upright bolts which extend through the edge strips and are secured to them, e.g., by riveting or welding, and the lower ends of which are connected by ties. The bolts may consist of a material having a higher strength than the edge strips themselves.

The edge strips have preferably smooth faces confronting the side walls of the bottom part and engaging the outer crests of the undulations formed in the side walls. This ensures a slight freedom of relative movement between the edge strips and the side walls so that the individual undulations can readily flatten away from the edge strips when the ski is being deflected.

The edge strips are preferably covered by steel edge members having the shape of an unequal angle in section. The shorter flange of said angle protrudes from the edge strip and serves at the same time to confine the edge of a tread facing which covers the edge strips and the intervening web of the bottom part of the box section. This tread facing covers also the gaps defined by the web with the edge strips and the angle section flanges lying thereon and is preferably made in known manner from a tough synthetic resin providing a smooth surface.

An illustrative embodiment of the invention is shown in the drawing.

FIG. 1 is a side elevation showing a ski, partly in section.

FIG. 2 is a perspective bottom view showing a ski, partly broken away, before the application of the tread facing.

FIG. 3 is a bottom view of the ski of FIG. 2, partly broken away to show one of the spaced ties.

FIG. 4 is a transverse sectional view showing a finished ski.

The ski body consists of two metal sections 1 and 2, which are made, e.g., from stainless sheet steel or a light alloy. The bottom part 1 is generally U-shaped in cross-section; its web is provided with a longitudinal groove 3 and it has outwardly angled edge flanges 4, over which the edges 5 of part 2 are folded inwardly. Alternatively, the part 2 might be bonded with an adhesive or by weld-

3

ing. The distance from part 2 to the web and consequently the height of the side walls 6 may increase from the two ends of the ski in known manner toward the area provided with the ski binding. If desired, the part 2 may be additionally provided adjacent to the ski binding with an applied or inserted reinforcement. The box section consisting of the parts 1 and 2 has side ledges which are formed by the parts 4 and 5 and protrude from the box section proper. The two side walls 6 of the bottom portion are undulated transversely to their longitudinal direction. These undulations may extend uniformly throughout the length of the ski or the spacing of the undulations and their depth may increase toward the area of the binding.

The side ledges 4, 5 have edge strips 7 secured to them, which fill the space that is left free below these side ledges and the height of which corresponds approximately to the height of the side walls 6. These edge strips are secured to the side ledges by means of bolts 11, which are riveted to the side ledges and extend through the side strips and the lower ends of which are interconnected by spaced metal bands 10 extending in transverse grooves 8 of the web 9 of the lower part 1. These edge strips are flat on the side facing the side walls and have a smooth surface 12 engaging the outer crests of the undulations. The edge strips themselves are preferably made from the hard light alloy known under the name "Duralumin." Alternatively, they may consist of hollow metal members, wooden members or, e.g., plastics reinforced with glass fibers. The edge strips are covered on the underside by steel edge members 13 consisting of unequal angles. The outer flanges 14 of these members 13 are aligned with the outside surface of the edge strips and serve at the same time to confine the edges of a tread facing 15 applied to the underside of the ski.

What is claimed is:

1. A metal ski which comprises top and bottom metal parts connected to form a generally rectangular box section, said top part being flat and said bottom part being generally U-shaped in cross-section and comprising a bottom web, upright side walls having undulations extending transversely to the longitudinal direction and in an area extending to the underside of the web, outwardly angled flanges at the top edges of said side walls, said

4

flanges being connected to said top part to form side ledges, edge strips secured to said side ledges and covering said side walls, and reinforcing edge members carried by said edge strips and disposed on the underside thereof.

2. A metal ski as set forth in claim 1, in which said edge strips consist of flexible light metal.

3. A metal ski as set forth in claim 2, in which said edge strips consist of Duralumin.

4. A metal ski as set forth in claim 1, which comprises ties disposed adjacent to the underside of said web and spaced in the longitudinal direction of said ski and connecting said edge strips.

5. A metal ski as set forth in claim 4, in which said underside of said web is formed with transverse grooves and said ties consist of bands lying in said grooves.

6. A metal ski as set forth in claim 4, in which said edge strips are fastened by upright bolts which extend through said edge strips and have top ends secured to said side ledges and lower ends connected by said ties.

7. A metal ski as set forth in claim 1, in which said edge strips have smooth surfaces confronting said side walls and said undulations have outer crests contacting said smooth surfaces.

8. A metal ski as set forth in claim 1, in which said reinforcing edge members consist of unequal angles of steel having a short flange which protrudes downwardly from the outer edge of the edge strip, said ski comprising further a tread facing disposed on the underside of said web and of the edge strips and laterally confined by said short flanges.

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