ABSTRACT OF THE DISCLOSURE

A ground engaging ski device for a snowmobile comprising an elongate ground engaging ski assembly including a leaf spring mounting member secured thereto intermediate to ends thereof and closing confining a generally rectangular shaped yieldable torsion member therein. An elongate ski standard adapted to be connected at its upper end to the conventional steering arm of the snowmobile to permit rotation of the standard about its longitudinal axis steering of the snowmobile. A generally inverted U-shaped engaging member secured to the lower end of the ski standard and mounted member and torsion member. A connector element on said torsion co-operatively engaged by a similar shaped connector element on said engaging member whereby said standard and torsion member are locked together to cause said ski standard and ski assembly to move as a unit when the standard is revolved about its longitudinal axis but permitting forceable, yieldable movement of the ski relative to the standard about a horizontal transverse axis.

SUMMARY OF INVENTION

In conventional snowmobiles, the ground engaging ski assembly is connected by an elongate standard to the steering arm of the snowmobile so that guiding of the snowmobile is accomplished by turning the skis about a vertical axis defined by the longitudinal axis of the standards. The ground-engaging skis must be capable of pivoting about a horizontal transverse axis in order to traverse uneven terrain and in the conventional snowmobiles the ground engaging ski assemblies are connected to their associated standards for free limited pivotal movement about a horizontal transverse axis. However, when the snowmobile passes over an obstruction and becomes momentarily airborne, the ski assemblies tend to loosely tilt about their transverse axes and the position of the ski cannot, therefore, be controlled by the operator. Further, allowing the ground engaging skis to freely pivot by action of gravity when the snowmobile becomes momentarily airborne, sometimes results in damage to the ski assemblies because the skis are not properly positioned when reengaging the ground.

An object of the present invention is to overcome this problem wherein the ski standards are uniquely connected to the ground engaging ski assemblies to permit steering of the ski assemblies but allowing the ski assemblies to be maintained in a predetermined relationship when the snowmobile becomes momentarily airborne, yet also permitting forceable, yieldable movement of the ski assemblies about a substantially horizontal transverse axis.

BRIEF DESCRIPTION OF THE FIGURES OF THE DRAWING

FIG. 1 is a perspective view of a snowmobile incorporating my novel ski assembly.

FIG. 2 is an enlarged, exploded perspective view illustrating details of construction of a novel invention.

FIG. 3 is a side elevational view of the lower end portion of the ski standard and the leaf springs of a ski assembly, and

FIG. 4 is a cross-sectional view on an enlarged scale taken approximately along lines 4—4 of FIG. 3, looking in the direction of the arrows.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to the drawings and most specifically to FIG. 1, it will be seen that a conventional snowmobile 10 is there shown and incorporates one embodiment of my invention. The snowmobile 10 includes a body 11 of conventional construction having an internal combustion engine mounted therein which drives ground engaging endless tracks 12 in a well known manner. Handle bars 13 are provided for steering the snowmobile and these handle bars through suitable conventional steering linkage control the position of the ground-engaging ski assemblies 14, all of which is of well known construction. The ski assemblies 14 each include an elongate generally arcuate shaped lower leaf spring 15, one end being bent to form an eyelet 16 and the other being accurately bent at 17. The ski 14 has front and rear pairs of upwardly projecting ears 18 integrally formed therewith which are suitably apertured and which are provided with pins 19 to secure the upper leaf spring 15 thereto. An upper somewhat shorter spring 20 of generally arcuate construction is positioned upon the leaf spring 15 and is secured thereto by suitable nut and bolt assemblies 21. The structure defined hereinabove is of well known conventional construction and, per se, forms no part of the present invention.

The present invention is directed to the provision of a unique manner of interconnecting the ski standard with the leaf springs so that the associated ski assembly will be maintained in a predetermined relation when airborne but will yieldably rock about a horizontal transverse axis.

This unique connection is also highly effective in facilitating steering of the ski assemblies. To this end, it will be noted that a generally inverted U-shaped mounting member 22 is secured to the upper surface of the upper leaf spring 20 intermediate the ends thereof. This U-shaped mounting member includes a web portion 23 having a pair of legs 24 integrally formed therewith and extending downwardly therefrom, and terminating in a pair of apertured outturned flanges 25 through which the bolts of the bolt and nut assemblies 21 pass therethrough.

A generally rectangular shaped torsion member 26 formed of a yieldable resilient material, such as rubber or the like, is positioned and closely confined within the volumetric space defined by the mounting member 22 and the upper leaf spring 20. This torsion member which is snugly positioned within the confines of the mounting member has an opening therethrough and this opening 27 in the embodiment shown is of hexagonal cross-sectional configuration. A first connector member 28 which as shown is a hexagonal sleeve and is positioned in the hexagonal opening in snug fitting relation therewith. Referring now to FIG. 4, it will be noted that the ends of hexagonal sleeve 28 are coplanar with the reduced ends of the torsion member 26.

The ski assembly also has an elongate ski standard 29 connected thereto and which is adapted to be connected at its upper end to the steering arm of the steering mechanism in a well known manner. The lower end portion of the standard 29 has a generally U-shaped engaging member 30 integrally formed therewith and projecting downwardly therefrom. This engaging member 30 includes a web portion 31 having a pair of legs 32 integrally formed therewith and depending therefrom each having a hexagonal opening 33 therein which are disposed in axial alignment. These openings 33 are of a smaller size than the outside diameter or dimensions of hexagonal connector sleeve 28.
The engaging member 30 is adapted to be positioned upon the mounting member 22 so that the web portion 30 of the engaging member is positioned upon and engages the web portion 23 of the mounting member. The legs 32 extend downwardly over the ends of the torsion member 26 so that the ends of the hexagonal sleeve 28 bear against the inner surfaces of legs 32. A hexagonal connector member or sleeve 34 extends through the openings 33 in the legs 32 and through the hexagonal passage in sleeve 28 in mating relation therewith. The connector sleeve 34 is of a length so that the ends thereof are substantially coplanar with the exterior surface of the legs 32.

An elongate headed bolt 35 which is threaded extends through the sleeve 34 and is connected to the engaging member 30 by suitable nut 36. Washers 37 are positioned exteriorly of the legs 33 to provide a clamping surface thereat. With this arrangement, the engaging member 30 is connected to a connector member or sleeve 38 by means of the connector sleeve 34 and nut and bolt assembly so that the standard 29 is clamped to the sleeve 28. However, because of the yieldable characteristics of the torsion member 26, each ski assembly may forcibly yield or rock vertically about a horizontal transverse axis when traversing uneven terrain. However, when the snowmobile is momentarily airborne when passing over a bump, the torsion member will retain the ski assembly in predetermined relation with respect to the standard 29.

Another distinct advantage in the present arrangement is that the various components are interrelated in such a way as to facilitate steering. In this regard, it will be noted that the legs 32 of the engaging member 30 bear against the legs 24 of the mounting member. Further, the ends of the web portion 23 of the mounting member also bears against the legs 32 so that a substantially large metal bearing surface is provided between the engaging member and mounting member. Therefore, when each standard is revolved about its longitudinal axis, this motion is transmitted to the ski by the coating interengaging metal surface areas of the mounting member and engaging member. This arrangement minimizes the occurrence of wear with respect to these parts while the torsion member provides a connection between the standard and ski assembly which serves to maintain the ski assembly in a predetermined relation when the ski assembly is airborne but allows forcible rocking of the ski assembly.

It will, therefore, be seen from the foregoing description that I have provided a novel device for interconnecting the conventional ski standard to the ski assembly of a snowmobile which not only improves the steering function but serves to maintain the ski assemblies in a predetermined relation with respect to the standard when the skis are airborne.

It will, therefore be seen from the foregoing description that my novel arrangement is not only of simple and inexpensive construction but one which functions in a more efficient manner than any heretofore known comparable device.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the various parts without departing from the scope of my invention.

What is claimed is:

1. A ski assembly for use with a snowmobile comprising a ground engaging ski, a leaf spring secured to said ski and extending upwardly therefrom, an elongate generally vertically oriented standard adapted to be connected at its upper end with the steering mechanism of the snowmobile, a torsion member formed of yieldable resilient material, and having an opening therein, a generally U-shaped mounting member embracing said torsion member and being arranged to prevent rotary movement between said mounting member and said torsion member, and mounting the same on said spring, a generally U-shaped attachment member on the lower end of said standard engaging said mounting member, and having depending legs disposed in close proximal relation with opposing sides of said mounting member to provide with said mounting member coating rigid bearing surfaces whereby revolving movement of said standard about its longitudinal axis causes turning of said ski, coupling elements on said attachment member and on said torsion member extending into the opening and transmitting rotational movement between said torsion member and said attachment member whereby said torsion member yieldably retains said ski against vertical swinging movement relative to said standard.

2. The ski assembly as defined in claim 1 wherein said torsion member is of generally rectangular configuration.

3. The ski assembly as defined in claim 1 wherein one of said elements comprises a sleeve.

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