

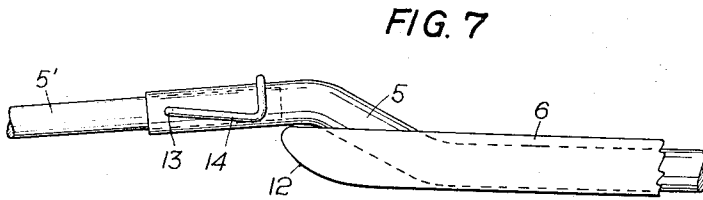
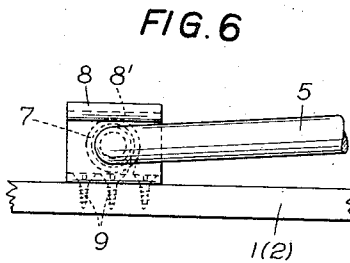
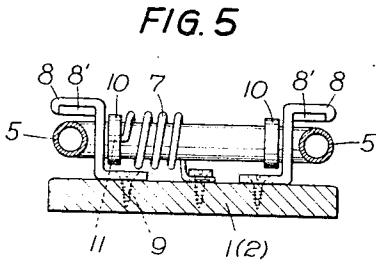
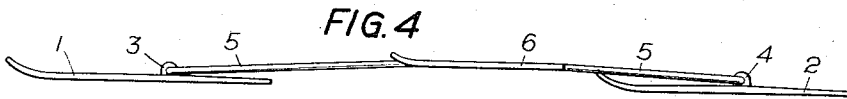
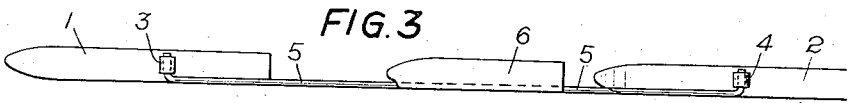
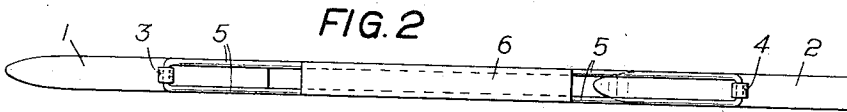
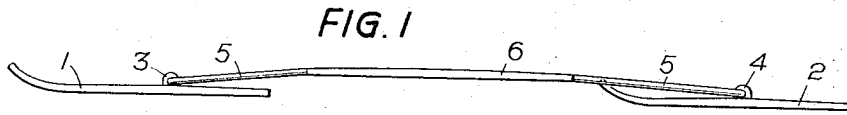
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ARTICULATED SKI

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**ARTICULATED SKI**

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**ABSTRACT OF THE DISCLOSURE**

A ski having a pair of longitudinally spaced ski members connected by a binding support overlying the relatively short ski members, the binding support being increased at intermediate locations along the ski members but at the ends of the binding support, at the ski members for pivoting movement about respective horizontal axes, the pivot is formed by U-shaped or closed-frame arrangements of bars received in bearing members of the ski members and engageable by resilient abutments limiting the pivoting movement. The binding support and ski members are attachably connected and provided with locking means for holding them in place. A spring means resiliently resists the pivoting movement.

This invention relates to a ski having a tread portion formed by two short ski members, which are connected by an overlying footboard, which carries the binding.

In a previously known ski of this type, the two short ski members were laterally staggered and the trailing end portion of the inner ski member was parallel to the leading end portion of the outer ski member and rigidly connected to said leading end portion by a footboard, which carried the binding. Such four-track skis did not enable canting and a reliable movement in the field. It is not believed that the maneuverability was improved by a suggestion to apply round-section iron bars to the tread of these skis. Besides, it is believed that skiing on four tracks required great forces.

In contrast to this, the usual ski having a single, continuous tread enables a fast and versatile advance in the field. On the other hand, the speed is limited by the great length of the tread, which has a relatively high frictional resistance; the forward sliding is also adversely affected by a certain suction effect. Skis were originally used for a movement in deep snow. This was facilitated by designing them for a small load per unit of area or with long treads. On the one hand, a ski having a much higher load per unit of area and affording a safe guidance would be desirable on modern courses for winter sports as these courses are hard and smooth.

This requirement is met according to the invention by a ski of the type defined initially hereinbefore and characterized in that each of the two short ski members arranged one behind the other has intermediate its length a bearing for the footboard, which is preferably similar to a footstool or bridge and provided, e.g., with angled ends. Any material known per se for the manufacture of skis and any combination of such materials, such as metal, plastics materials or wood may be used.

Owing to the design according to the invention, this ski has the following advantages:

(1) The tread which is effective during straight forward skiing in a level field is much smaller than that of a ski having a single, continuous tread so that the resistance to the sliding movement and the suction effect are much reduced.

(2) The pivoted mounting of the two short ski members enables a perfect adaptation of the tread to the ground

during each step so that the ski is reliably guided and so-called "fluttering" is avoided to a large extent.

(3) The excellent adaptation of the skis to the ground result in a saving of energy and a reduced fatigue of the skier.

A further important improvement is afforded in an embodiment in which the hinge movement of the short ski members relative to the footboard is limited by resilient stops.

The invention will be explained more fully hereinafter with reference to some embodiments shown by way of example in the drawing.

FIGS. 1, 2 and 3, 4, respectively, are top-plan views and side elevations of embodiments of the invention.

FIGS. 5 and 6, respectively, show a footboard bearing secured to a short ski member in front and side elevation.

FIG. 7 is an enlarged view showing a connecting member of a composite footboard.

In the embodiments shown in FIGS. 1 and 2, the two short ski members 1 and 2 consist e.g., of so-called hard-snow gliders or the like and need not be of the same length. They are provided intermediate their length with bearings 3 and 4, in which the end portions of a footboard are hinged. In this case, this footboard consists of a rigid frame, which is assembled from tubes or the like and has forward and rear end portions 5, which are angled from the top. This top is provided with a bar or plate 6, to which the binding, not shown, is secured.

The embodiment shown in FIGS. 3 and 4 differs from the one described hereinbefore in that the footboard does not consist of a closed frame but of a U-shaped frame, which has end portions hinged to the short ski members at the bearings 3 and 4 and carries the bar 6 for fixing the binding. The forward end portion of the substantially horizontal bar 6 may advantageously be curved like a scoop, as is shown in FIG. 4.

Other embodiments may comprise one or more tubes, rails or the like, which do not extend continuously from the forward bearing 3 to the rear bearing 4 but are secured in any suitable manner to the two ends of the bar 6. These members may be hinged to the ends of the bar 6. In this case a relatively strong expanding spring 7 may be provided adjacent to each of the bearings 3 and 4 to urge the end portion 5 of the footboard from the short ski, as is indicated in FIG. 5. In one embodiment, the ends 5 of the footboard may be connected with interposed leaf springs to the bar 6 for carrying the binding.

Whereas the bearings 3 and 4 carried by the short ski members 1 and 2 may be of any suitable known type, they consist preferably of simple journal bearings. For instance, as is shown in FIGS. 5 and 6, each of the bearings 3 and 4 may comprise two Z-section bars 8 formed with bores for receiving the end portions 5 of the footboard. These bars may be arranged with mirror symmetry and with their lower flanges directed toward each other and secured to the short ski members 1 and 2, e.g., with screws 9. Each of the angled or U-shaped end portions 5 of the footboard carries preferably two collars 10, which limit the play of the end portions in the bearings 3 and 4 in the lateral direction of the ski members.

As has already been mentioned, it is desirable, particularly to enable a field jump, to limit the hinge movement of the short ski members 1 and 2 relative to the footboard by any suitable means. As is illustrated in FIGS. 5 and 6, this may be achieved in a simple manner in that the outwardly directed flanges of the section bars 8 which form the bearings 3 and 4 overlie the end portions 5 of the frame of the footboard and are preferably provided on their underside with a pad 8' of resilient material, such as a rubber buffer, which limits the hinge movement of the short ski members 1 and 2. The pads

8' may be replaced by rubber rings on the frame of the footboard.

As is shown in FIG. 5, each bearing 3 or 4 accommodates an expanding spring 7, which is mounted at one end in a bore 11 of a collar 10 and at the other end in the short ski member 1 or 2. The turns of the spring 7 may surround the cylindrical core so that they closely engage the core and oppose the hinge movement of the core when the short ski member exceeds a predetermined inclination relative to the horizontal footboard.

In the embodiment shown in FIG. 7, the frame of the footboard is embedded in the bar 6 and the tube 5' is suitably upwardly offset at the point where it emerges from the bar 6. The lowermost generatrix of the offset portion of the tube 5' is aligned with the top surface of the bar 6.

To minimize the resistance to the movement in the snow, the forward edge of the bar 6 forms suitably a broken or curved line (12 in FIG. 7).

In a ski which can be collapsed for transport, the offset end of the frame portion 5' may be provided with a socket for connection to a plug. The plug connection between the frame members 5' and 5 may be locked by any suitable, known means. For instance, a U-shaped metal yoke 14 or bent wire may extend through aligned holes 13 in the two frame members fitted together.

The invention may be embodied in any desired combination of the described features of the ski according to their technical equivalents.

It has already been mentioned that during straight forward skiing in a level field only the treads of the two short ski members 1 and 2 slide on the snow so that the resistance to the sliding movement is small. Slight irregularities of the ground are taken up by the footboard, which is resilient at right angles to the direction of the movement of the ski. In a rolling field, the pivoted mounting of the two short ski members becomes effective. When the ski runs up on a crest of a wavy terrain, the forward short ski member will be raised first and will adapt itself to the wave while sliding across the same so that the contact with the ground is constantly maintained and a sudden rise of the skis is avoided. Then the footboard with the bar 6 carrying the binding is pushed over the wave and may contact the same at its crest. The rear short ski member 2 slides then across the wave like the short ski member 1.

The movement of the ski according to the invention across irregularities of the course is similar in a sense to the motion of endless track vehicles although the same are not identical or technically equivalent. A skier who uses the skis according to the invention can uphold himself much more easily. The dangerous sudden deflecting of the skis and hard knocks due to irregularities of the course are prevented to a large extent.

On the ski according to the invention, the direction of movement may be changed at any time, e.g., by a swing. During the swing, the pressure on the footboard is increased by centrifugal force and together with the inclination of the ski may cause portions of the footboard, preferably the bar 6, to be canted in contact with the ground so that they contribute to a reliable regaining of control by the skier when the swing has been completed. During a swing, the skis also adapt themselves well to all irregularities of the ground and a maximum ground adherence is obtained.

As has already been mentioned, the two short skis may be held by any suitable means so that their treads are parallel to the bar 6 for supporting the binding when they do not contact the ground, e.g., during a field jump. These means may comprise a spring 7 as shown in FIG. 5. Alternatively, these means may comprise a tension spring, not shown, which is secured at one end to one of the two bars 8 forming the bearing 3 and at the other end to the frame 5 of the footboard.

It is generally desirable to provide suitable, known

means to limit the hinge movement of the two short ski members 1 and 2 in both directions.

In a collapsible ski according to the invention, specific tip and rear end portions or short ski members 1 and 2 specially particularly suitable for a given purpose, such as downhill, slalom, etc. skiing, may be fitted to the footboard.

What is claimed is:

1. A ski which comprises two ski members, each of which carries on its top intermediate its length a bearing having a horizontal axis which is transverse to the longitudinal direction of the respective ski member, and a binding support disposed above said ski members and hinged to said bearings, said binding support comprising a closed frame and a bar carried by said frame and adapted to have a ski binding secured to it.

2. A ski as set forth in claim 1, in which said binding support comprises a top portion and depending end portions hinged to said bearings.

3. A ski as set forth in claim 2, in which said end portions are inclined downwardly from said top portion.

4. A ski as set forth in claim 1, wherein said frame consists of an assembly of tube members.

5. A ski as set forth in claim 1, which further comprises resilient means arranged to limit the hinge movement of said ski members relative to said binding support.

6. A ski as set forth in claim 1, which further comprises means cooperating with said ski members and said binding support and urging said ski members to a position in which they are generally parallel to said binding support.

7. A ski which comprises two ski members, each of which carries on its top intermediate its length a bearing having a horizontal axis which is transverse to the longitudinal direction of the respective ski member, and a binding support disposed above said ski members and hinged to said bearings, said binding support comprising a U-shaped frame having laterally directed limbs hinged to said bearings, and a bar carried by said U-shaped frame and adapted to have a ski binding secured to it.

8. A ski as set forth in claim 7, wherein said bar has a forward end portion curved upwardly in scooplike form.

9. A ski as set forth in claim 7, wherein said binding support comprises end portions hinged to said bearings and extending through them and each of said end portions carries two collars arranged to limit the lateral play of the end portion in the bearing.

10. A ski as set forth in claim 9, in which said end portions are U-shaped.

11. A ski, which comprises two ski members, each of which carries on its top intermediate its length a bearing having a horizontal axis which is transverse to the longitudinal direction of the respective ski member and a binding support disposed above said ski members and hinged to said bearings, each of said bearings being formed by two Z-section bars extending in the longitudinal direction of the ski member and laterally spaced apart, said bars being arranged with mirror symmetry and having lower flanges directed toward each other and webs formed with laterally aligned bores, and said binding support comprises end portions hinged in said bores.

12. A ski as set forth in claim 11, which comprises screws securing said bars to said ski members.

13. A ski as set forth in claim 11, in which said bars have outwardly directed top flanges overlying said end portions of said binding support.

14. A ski as set forth in claim 13, which comprises pads of resilient material carried by said top flanges on the underside thereof to limit the hinge movement of said short ski members relative to said binding support.

15. A ski as set forth in claim 14, in which said pads consist of rubber buffers.

16. A ski, which comprises two ski members, each of which carries on its top intermediate its length a bearing having a horizontal axis which is transverse to the longi-

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tudinal direction of the respective ski member, and a binding support disposed above said ski members and hinged to said bearings, each of said ski members and its bearing forming a respective assembly, said binding support comprising end portions hinged to said bearings and carrying collars arranged to limit the lateral play of said end portions in said bearings, each of said collars being formed with a bore, said ski further comprising two expanding springs, each of which is mounted on one of said end portions and has one end held in said bore and another end bearing on said assembly.

17. A ski as set forth in claim 16, wherein said other end of said spring bears one said ski member.

18. A ski as set forth in claim 16, in which said end portions comprise cylindrical portions surrounded by said expanding springs and said springs are arranged to contract and closely embrace said cylindrical portions to limit the hinge movement of said ski members relative to said binding support.

19. A ski, which comprises two ski members, each of which carries on its top intermediate its length a bearing having a horizontal axis which is transverse to the longitudinal direction of the respective ski member, and a binding support disposed above said ski members and hinged to said bearings, said binding support comprising a bar adapted to have a ski binding secured to it and a frame hinged to said bearings, said frame having an intermediate portion which is countersunk into the top surface of said bar, said frame further having connecting portions extending from said intermediate portion towards said bearings, said connecting portions being upwardly offset from said intermediate portions and having a bottom portion which lies substantially in the same plane as the top surface of said bar.

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20. A ski as set forth in claim 19, in which said bar has an upwardly curved forward end portion.

21. A ski which comprises two ski members, each of which carries on its top intermediate its length a bearing having a horizontal axis which is transverse to the longitudinal direction of the respective ski member, and a binding support disposed above said ski members and hinged to said bearings, said binding support comprising a frame hinged to said bearings and a bar adapted to have a ski binding secured to it, said frame comprising a forward part, an intermediate part and a rear part, said bar being secured to said intermediate part, said parts of said frame being detachably connected, and locking means arranged to lock said parts in connected relation.

22. A ski as set forth in claim 21 wherein said locking means comprise bent-wire members.

23. A ski as set forth in claim 21, which comprises means arranged to limit the hinge movement of said ski members relative to said binding support.

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