

[54] **WHEELED SKI**

[76] Inventor: **John G. Nicolson**, 1919 E. Cornell Ave., Denver, Colo. 80210

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[52] U.S. Cl. **280/11.2, 280/11.23**

[51] Int. Cl. **A63c 17/14**

[58] Field of Search **280/11.23, 11.2, 280/11.21, 11.11, 11.19, 11.22, 11.25**

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Primary Examiner—Benjamin Hersh

Assistant Examiner—Milton L. Smith

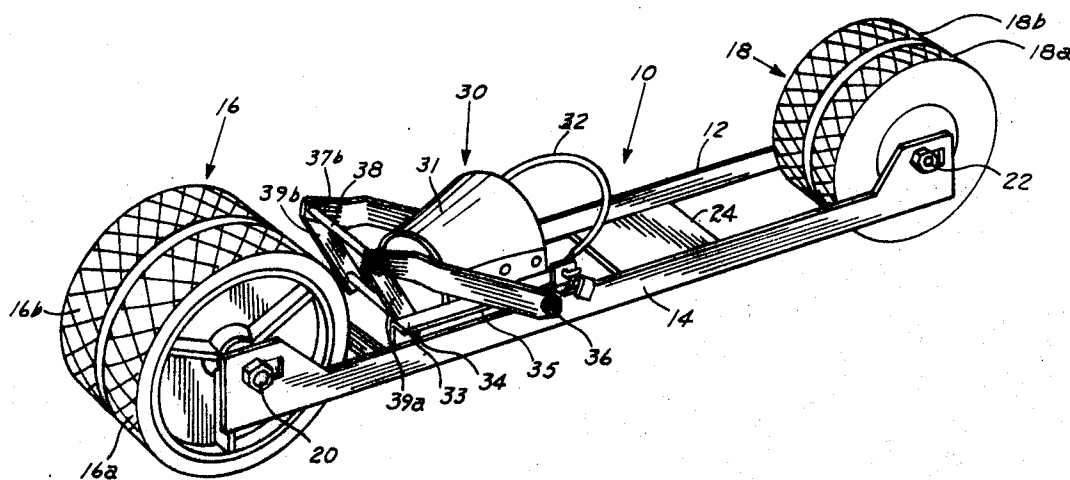
Attorney—Richard D. Law

[57]

ABSTRACT

A dry land ski assembly, having forward and rear wheels, includes a foot harness assembly pivotal by body action of the user from a free wheeling to a restricted rotation position for the front wheels.

10 Claims, 10 Drawing Figures



SHEET 1 OF 2

FIG. 1

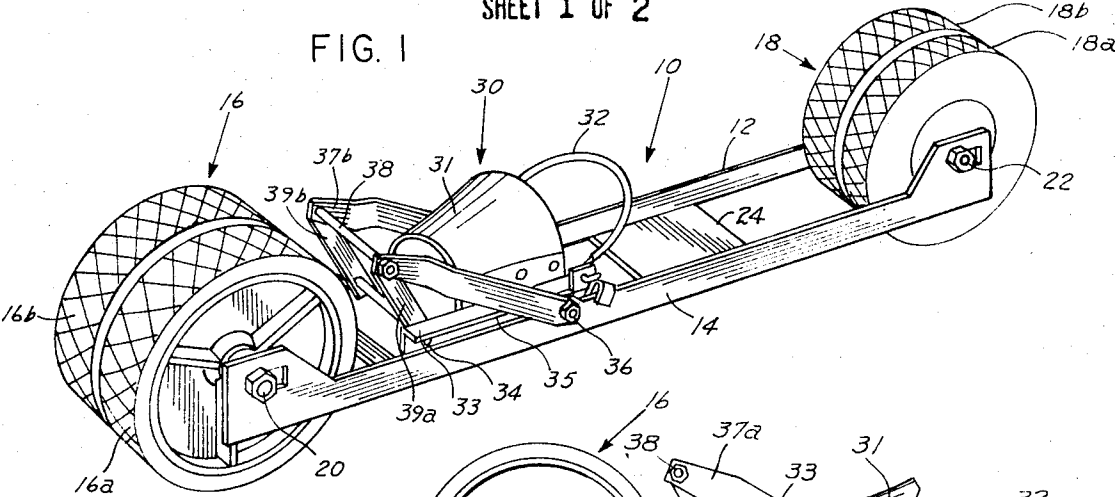


FIG. 3

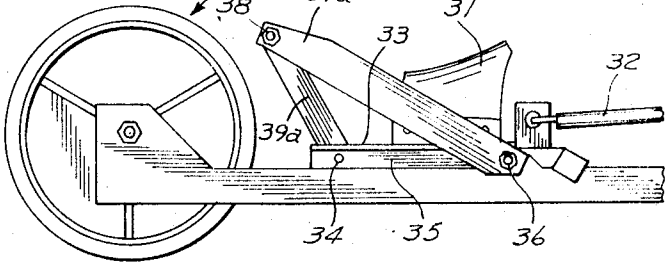


FIG. 2

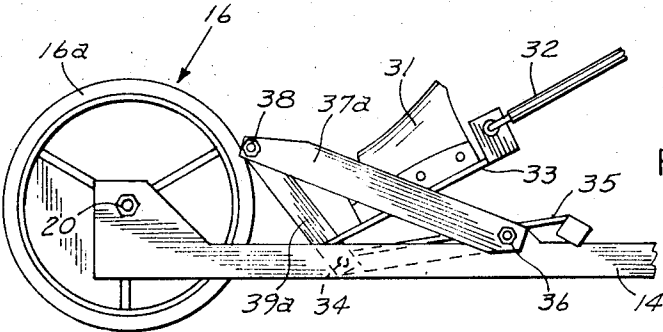


FIG. 6

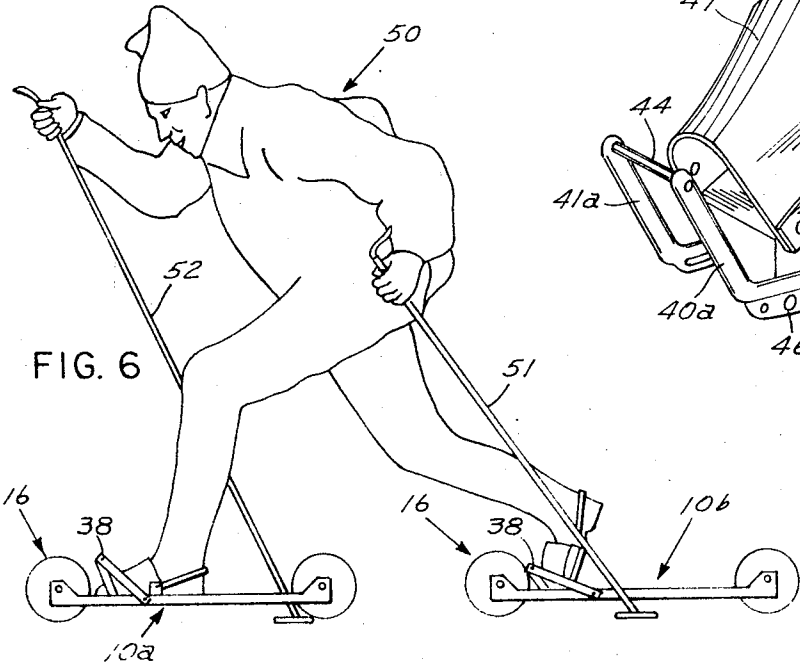
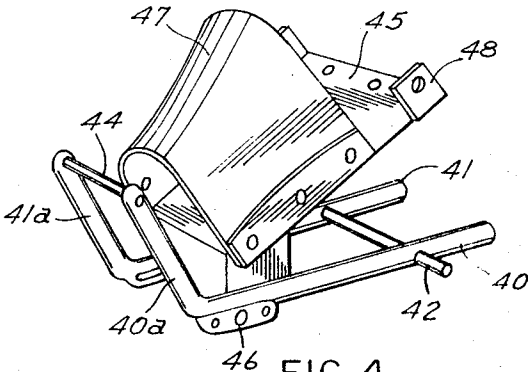


FIG. 4



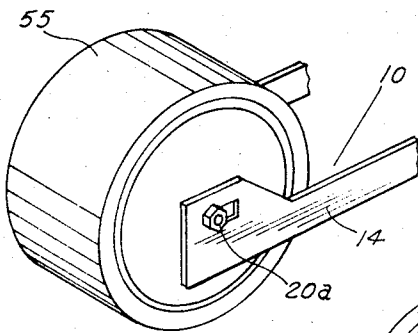


FIG. 5

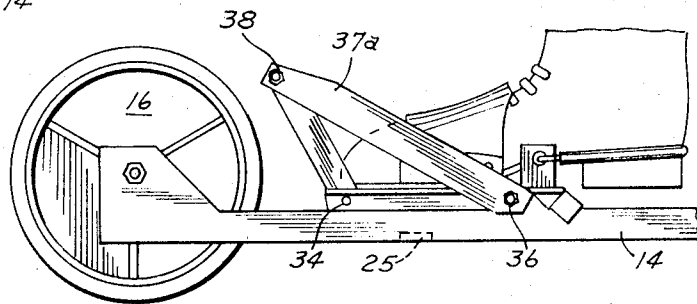


FIG. 7

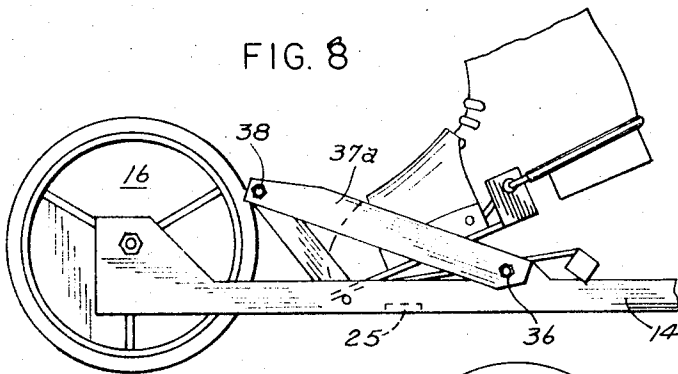


FIG. 8

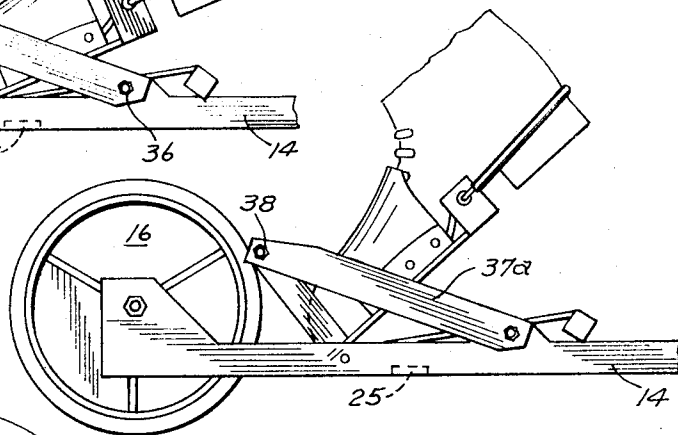


FIG. 9

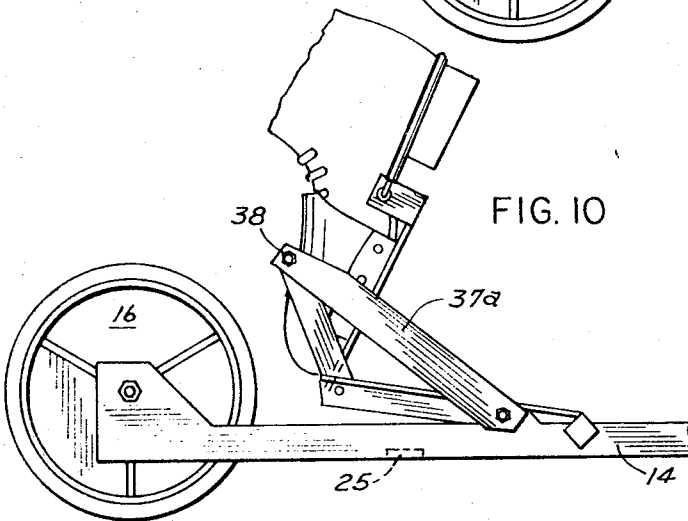


FIG. 10

WHEELED SKI

This invention relates to a dry land ski, which includes a means for restricting wheel rotation for locomotion of the user and free wheeling for gliding. The invention includes an elongated frame having front and rear wheels and a foot harness attached to the frame.

In cross country snow skiing, properly waxed skis permit a skier to propel himself by pushing against one ski to permit the other ski to glide forwardly. Some means is necessary to hold the one ski from sliding backwards during the pushing, and this is accomplished, among other means, by particular type of wax on the skis. The wax, on the normal walking movement, prevents backward sliding of the skis but permits forward sliding of the skis. Thus, travel is accomplished by alternately pushing against one ski while gliding the other forward. Ski poles are used to assist the skier in locomotion as well as for balance.

According to the present invention there is provided a wheeled ski having an equivalent action of cross-country snow skis. The invention includes a frame having wheels at the front and the rear, and a pivotal foot harness having a wheel braking means actuated by movement of the skier's foot in the action of walking forward. The foot harness includes a pivoted platform having a forwardly projecting brake-means when the heel is raised thereby forcing the braking mechanism onto the front wheel. Once contact is made, any backward rotation of the front wheel initiates a "wedging" action, which presses the brake even more firmly against the wheel. The braking of the front wheel permits the skier to push forwardly so that the other ski rolls forward. When the heel is pressed downwardly towards the frame, the brake is released and the ski is in a free wheeling position.

It is, therefore, an object and advantage of the present invention to provide a wheeled ski for dry land use, where a user attaches one ski on each foot.

Another object of the invention is to provide a wheeled ski having a wheel locking means permitting a skier to push forwardly against the restricted ski.

Still another object of the invention is to provide a wheeled ski in which body action of the user raising his heel brakes the front wheel of a single ski to permit the skier to push against such a ski for forward locomotion of his other ski.

Yet another object of the invention is to provide a wheeled ski which is arranged for touring as well as gliding.

An additional object of the invention is to provide a wheeled ski having a pivoted foot harness which permits free action of the skier's foot in a walking stance to permit touring by the skier.

These and other objects and advantages of the invention may be readily ascertained by referring to the following description and appended illustrations in which:

FIG. 1 is a perspective view of one form of a dry land ski according to the invention;

FIG. 2 is a detailed view of the front portion of the dry land ski of the invention, illustrating the positioning of the foot harness to brake against the front wheel of the ski;

FIG. 3 is a detailed view of the front portion of the ski of FIG. 1 illustrating the down position of the foot harness releasing the braking means and permitting free wheeling of the ski;

FIG. 4 is a perspective view of a modified form of foot harness for use with the ski of the invention;

FIG. 5 is a perspective view of a slightly modified form of wheel for the dry land ski;

FIG. 6 is a schematic view of a skier using the dry land skis according to the invention, illustrating the gliding of one ski and the holding of the other ski for pushing thereagainst;

FIG. 7 is a schematic view of the brake portion of a ski according to the invention, illustrating a gliding position at the start of a stride;

FIG. 8 is another schematic view of the brake portion showing an initial contact position of the ski brake in an intermediate position of a stride;

FIG. 9 is still another schematic view of the brake portion showing the wedging action of the ski brake; and

FIG. 10 is another schematic view of the brake portion in a release action of the ski brake at the end of a stride.

In the device illustrated in FIG. 1, a dry land ski includes a frame, shown in general by numeral 10, consisting of side rails 12 and 14, extending from a front wheel set, shown in general by numeral 16. The front wheel set 16 is rotatively mounted on an axle 20 which permits the wheels to freely rotate. The axle joins the two side rails together at the front end. A shaft 22 for the rear wheel set 18 joins the rear end of the frame members together and permits free rotation of the wheel set 18. Intermediate the ends of the frame member, a heel plate 24 is secured across the side rails 12 and 14. The front wheel set 16 is composed of a pair of spaced apart wheels 16a and 16b which rotate independently of each other on the shaft 20. In a like manner, the rear wheel set 18 includes separate spaced apart wheels 18a and 18b mounted on the shaft 22. The spaced apart wheels permits the use of two relatively thin wheels, providing a stability not possible for a single such wheel. Further, the relatively thin wheels are available at reasonably low prices.

A pivotal foot harness, shown in general by numeral 30, includes a toe piece 31, a heel strap 32 and a toe platform 33. The toe platform 33 is pivotally mounted adjacent its end, so that the toe platform may be pivoted upwardly as shown in FIG. 2, about the pivot 34. The pivot 34 is mounted in a pair of side members 35 one on each side, which are in turn pivoted about a pivot 36 preferably in a boss (not shown) raised above the top of each side frame. A pair of links or arms 37a and 37b mounted on the pivot 36 are pivotally secured to another pivot pin 38 which in turn has a pair of links 39a and 39b to the pivot 34.

As shown in FIGS. 3 and 7, with the foot flat on the frame the toe frame 33 is, also, horizontal. When the heel is raised, FIG. 8, the unit pivots about pivot 36 causing the pivot bar 38 to impinge on the wheel set 16 thereby preventing rotation of the wheel. A limit to downward movement of the foot harness is provided by a cross piece 25, shown in FIGS. 7-10, and prevents complete wedging and movement past the wheel. Pivot 34 permits the heel to be further raised, FIG. 9, maintaining the braking action. This additional pivoting gives the skier free movement of the foot for locomotion. A further movement at the end of the stride causes the whole foot to be lifted, FIG. 10, and the brake 38 is pivoted upwardly away from the wheel allowing the ski to roll freely even though the heel is

raised. This action is shown in the trailing foot of the skier in FIG. 6. When the foot is flat on the frame, the pivot pin 38 is moved away from the wheel and the wheel set 16 may free wheel.

In the modification shown in FIG. 4 a pair of frame members or arms 40 and 41 are secured together by means of a pivot pin 42, which is pivotally attached to the frame at the point of attachment of pivot pin 36 on the frame 10. The members 40 and 41 are bent upwardly at 40a and 41a to support a brake member 44 therebetween. A foot harness is pivotally mounted on the frame members 40 and 41 by a toe plate 45 pivotally secured to the members 40 and 41 by means of a pivot pin 46. This arrangement dispenses with the side links 37a and 37b of FIG. 1, providing a simpler design. A toe strap 47 is secured to the toe plate 45, and a heel strap, not shown, may be attached to a tab 48 on the one side and a similar tab on the other side of the toe plate. This arrangement operates in a similar manner to that of FIG. 1 in that as the user raises his heel the frame members 40 and 41 pivot downwardly forcing the brake member 44 against the wheel set. The brake will wedge against the wheel and the skier can pivot his foot upwardly about the pivot 46 to permit long strides with the unit. At the end of a stride, the skier's foot may be raised to release the brake, similar to FIG. 10, for gliding that ski forwardly.

As shown in FIG. 6, a skier, shown in general by numeral 50, has a ski 10a attached to one foot and a ski 10b attached to the other foot. The skier is provided with ski poles 51 and 52 to help balance and propulsion along the ground. The foot in the ski 10a is flat and the brake member 38 is not in contact with the front wheel set 16, and this ski is in gliding position. The ski 10b, however, has the skier's heel raised (because of the walking position) so that the brake 38 is impinging upon the wheel set 16 locking the same and permitting the skier to push against the ski. The push propels the other ski in a forward glide, thereby providing locomotion. As the skier raises his foot, releasing the pushing pressure on the ski 10b, he can pull that ski up in a gliding motion alongside the other. As that leg is extended outwardly, the heel moves downwardly on the ski 10a so that the foot is flat on the ski. The other heel is now raised locking the wheel and permitting the first ski to be glided out beyond the locked ski. This action is repeated for foot to foot during the walking or touring movement.

In the embodiment shown in FIG. 5, a single wheel 55 is mounted on a frame 10, rotated about an axle 20a. This single wheel is a relatively wide wheel permitting the similar action of the ski. The single wide wheel provides balance and stability for the skier in place of the double wheel set. Since turning is accomplished by

lifting the ski and placing it at an angle, similar to a step Christi turn in snow skiing, both a single or double wheel unit may be effectively used.

I claim:

1. A dry land ski, usable in pairs by a user, comprising a frame member; a front wheel set journaled for rotation at the front of said frame member and a rear wheel set journaled for rotation at the rear of said frame member; foot harness means arranged on said frame member intermediate said front and rear wheels inclusive of a toe plate, toe holder attached thereto and heel holding means; said foot harness means being pivotally mounted so as to pivot from a generally horizontal position downwardly toward said front wheel set; said toe plate being pivotally mounted in said foot harness means permitting pivoting thereof on upward and downward movement of the user's heel; and brake means mounted on said foot harness means positioned to contact said front wheel set when said foot harness means is pivoted downwardly for preventing rotation of said front wheel set.

2. A dry land ski according to claim 1 wherein said frame member includes a pair of opposed side frame members.

3. A dry land ski according to claim 2 wherein a cross member between said pair of opposed side frames provides a heel rest for a generally horizontal foot position.

4. A dry land ski according to claim 1 wherein said front and rear wheel sets are formed of at least two wheels each, and each set being journaled on a single shaft.

5. A dry land ski according to claim 1 wherein each said front and rear set is a single wheel.

6. A dry land ski according to claim 1 wherein said foot harness means includes side frame members pivoted on said frame member.

7. A dry land ski according to claim 5 wherein said foot harness means also includes a link extending from the pivot thereof to said brake means.

8. A dry land ski according to claim 1 wherein said foot harness means includes side frame members pivoted adjacent one end on said frame member and having upwardly directed ends at the opposite end, and said brake means is mounted on said upwardly directed ends.

9. A dry land ski according to claim 1 wherein said frame member includes a cross piece positioned to limit downward pivoting movement of said foot harness means.

10. A dry land ski according to claim 1 wherein said toe to plate pivots independently of said foot harness means.

* * * * *

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,749,413 Dated July 31, 1973

Inventor(s) John G. Nicolson

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Col. 4, line 52 after "toe" the word "to" should be omitted.

Signed and sealed this 16th day of July 1974.

(SEAL)
Attest:

McCOY M. GIBSON, JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents