United States Patent

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[54] **SPRING BIASED SKI EXERCISE MOUNTED ON ADJUSTABLE INCLINED SLOPE**
10 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** **272/57**
[51] **Int. Cl.** **A63b 21/00**, A63b 23/02, A63b 69/18
[50] **Field of Search** ..... 272/57 A

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ABSTRACT: A snow ski exercising and training apparatus including a base upon which is mounted a pair of elongated ski simulating members, the forward ends of which are pivotally secured to the base so that the ski members can be pivotally moved transversely of the base about axes at their forward ends. Adjacent their rear ends, the skis are supported by a transversely extending slide bar for the transverse movement. A spring couples the skis together adjacent the forward ends to urge the same rotatably outward with respect to one another about their longitudinal axes, and tension springs couple each of the ski members to the base to provide resilient resistance to the transverse movement. A waistband is provided for the user and tension springs are used for attaching the waistband to the rearwardly ends of the ski members.

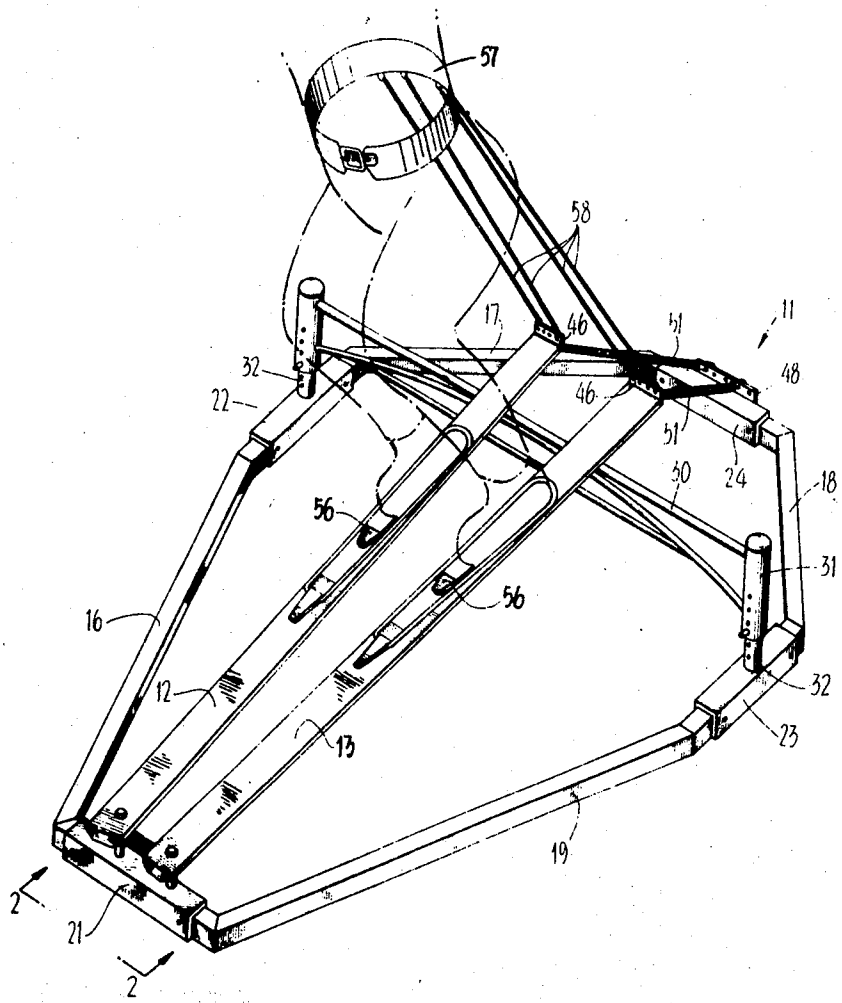


Fig. 1

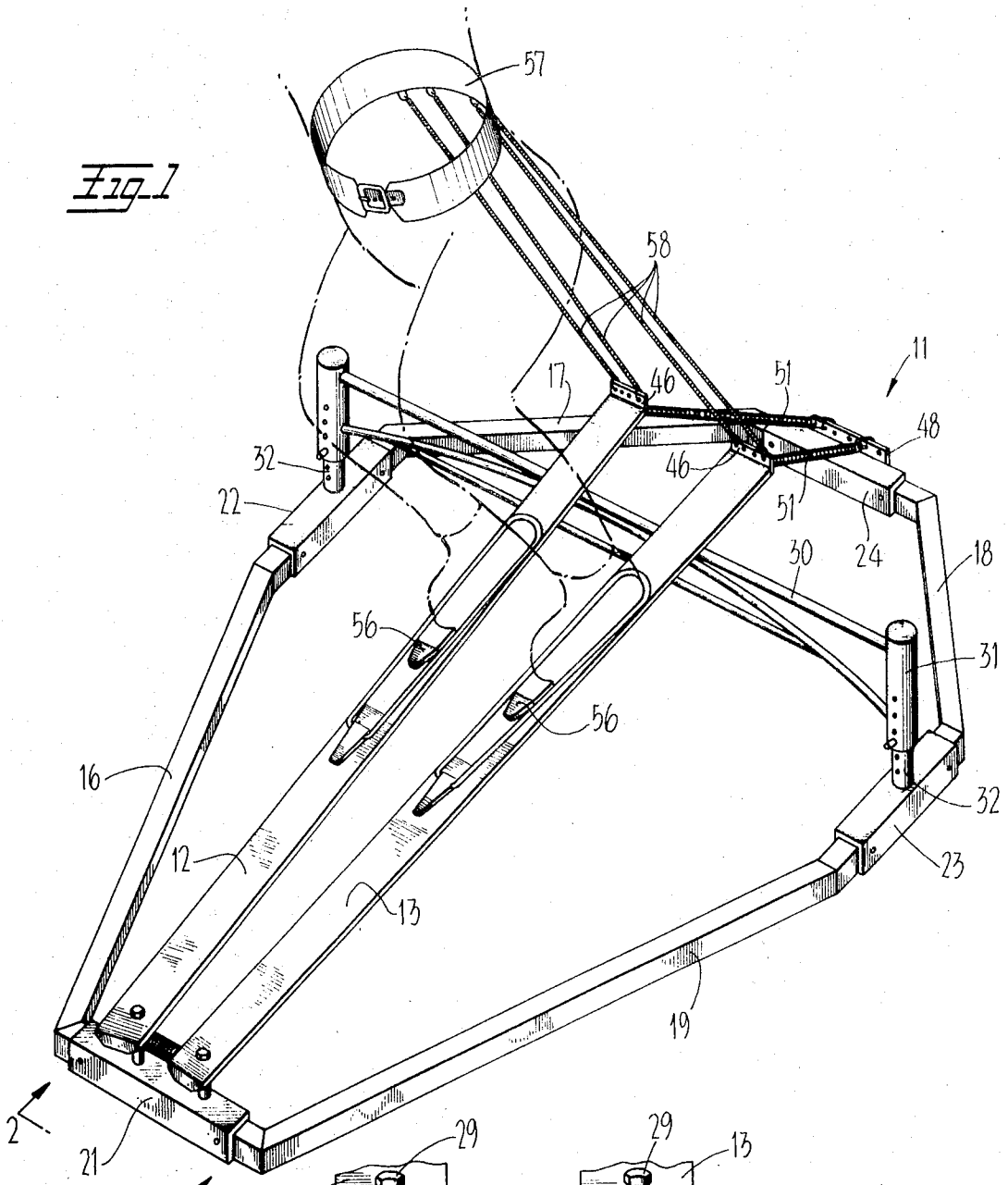
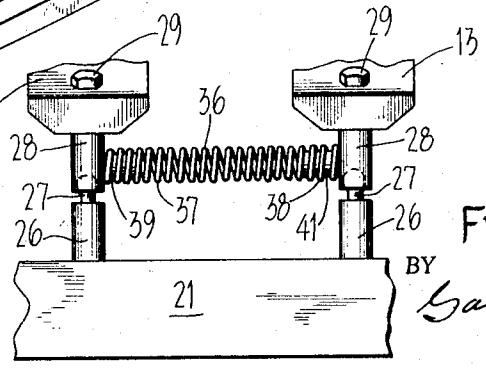


Fig. 2



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Fig. 3

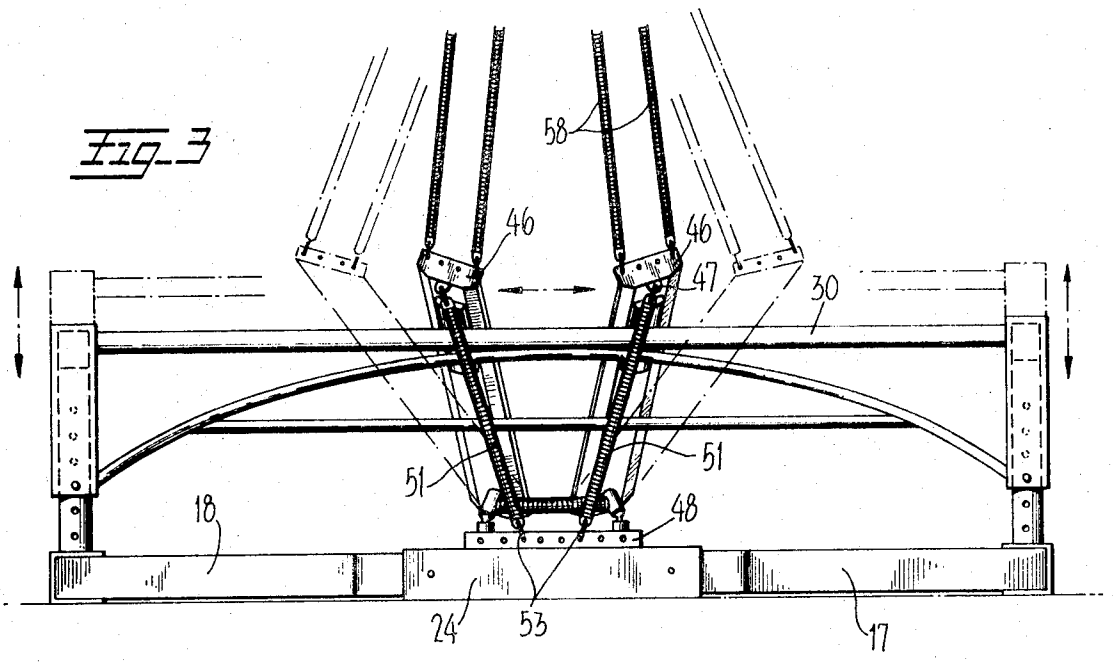


Fig. 4

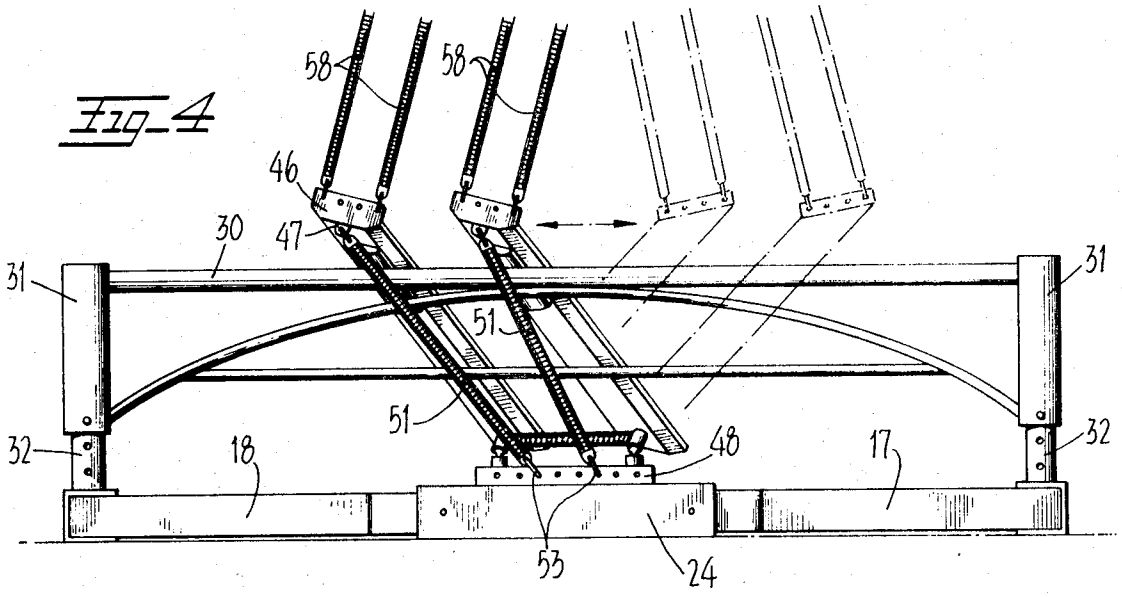
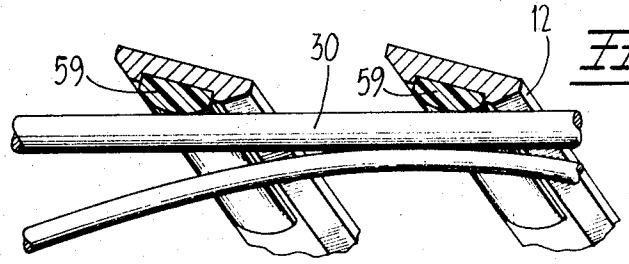


Fig. 5



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SPRING BIASED SKI EXERCISE MOUNTED ON ADJUSTABLE INCLINED SLOPE

BACKGROUND OF THE INVENTION

This invention relates to a snow skiing exercising and training apparatus and, more particularly, to such an apparatus which simulates the actual conditions of snow skiing to assure exercising of the appropriate muscles of a skier, and to train the correct body movements for skiing maneuvers.

During the last several years, the popularity of snow skiing has increased tremendously. Many people have taken up the sport for recreation and relaxation. However, a majority of these people are only part time skiers and most often do not take the proper steps necessary before skiing to assure that they are in appropriate physical condition. The result is that injuries on ski slopes are quite common. Even expert skiers need proper physical conditioning before a ski season. While ski exercising apparatuses have been provided in the past, they generally have not simulated sufficiently either the actual skiing movements or the forces to be expected during ski maneuvers to provide the full muscle conditioning necessary to place the skier in the proper physical fitness for skiing.

SUMMARY OF THE INVENTION

The instant invention is a ski exercising and training apparatus which assures proper conditioning of the appropriate body muscles by requiring the user to assume skiing positions and by simulating the forces a skier will encounter in conducting skiing maneuvers. The apparatus of the invention also acts as a training device on which a skier can practice proper body and ski movements for correct skiing. In its basic aspects, the apparatus comprises a pair of skis or ski simulating members which have their forward ends pivotally secured to a base. Adjacent their rear ends, the ski simulating members rest upon a transversely extending slide rod or bar, and suitable bindings are provided on the ski members for securing the feet of a user thereto.

One desiring to exercise or train for skiing can secure his feet to the ski representing members and stand on such members the same way he would stand on skis. The pivotal connection of the forward ends of the skis to the base, and the support of them on the transversely extending slide rod, enables the user to move the ski representing members transversely with his body in the same manner he would move skis in skiing down a hill. Desirably, springs couple each of the skiing members to the base at a location rearwardly of the pivot point to provide resilient resistance to the transverse movement of the ski members. This resistance to the movement will strengthen the body, hip and leg muscles of the user which cause these movements, as well as simulate the forces of snow on the skis during turns. The apparatus also desirably includes a spring in compression between the ski members at their pivotal connections to the base for the purpose for the purpose of urging the skis rotatably outward about their longitudinal axes. Thus, in standing correctly on the ski members, the user must maintain the skis inwardly with his legs against the spring pressure thereby strengthening his ankles.

From the above it should be readily apparent that the apparatus of the invention enables one to conduct the body motions and maneuvers ordinarily conducted in skis, and thereby practice these maneuvers to increase his proficiency. At the same time one is utilizing the apparatus to practice, he is also exercising the proper muscles to place himself in condition for skiing. The preferred embodiment of the invention described below has additional features which enhance its use as both an exercising and training apparatus.

BRIEF DESCRIPTION OF THE DRAWINGS

With reference to the accompanying two sheets of drawings:

FIG. 1 is an isometric view depicting a preferred embodiment of the invention having a user shown in phantom and in position to use the apparatus;

FIG. 2 is a broken front view in elevation taken on a plane indicated by the lines 2–2 of FIG. 1 illustrating the spring coupling the skis together and the pivotal connection to the base of the forward ends of the skis;

FIG. 3 is a rear elevation view of the apparatus, depicting the ski members and the slide bar in alternate positions in phantom;

FIG. 4 is another rear elevational view of the apparatus showing the ski members in second alternate position in phantom; and

FIG. 5 is a partial view of the ski members and the slide bar illustrating the ski members in cross section to show the construction thereof.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the drawings and particularly to FIG. 1, it will be seen that the illustrated preferred embodiment of the invention includes a base 11 upon which are mounted two ski representing members 12 and 13 respectively. While the members 12 and 13 can be actual skis if desired, it is preferred that they merely be members simulating skis. However, as used herein and in the claims, the terms "ski simulating members," "ski representative members " and "ski representing members " are meant to include within their scope actual skis.

The base 11 of the apparatus includes a generally quadrangular frame having four basic tabular frame members 16, 17, 18, and 19. Frame members 16 and 19 taper inwardly toward one another forwardly of the apparatus and their forward ends are connected together by a transversely extending forward end tubular member 21. Frame members 17 and 18 are connected to the rear ends of frame members 16 and 19, respectively, by longitudinally extending side tubular members 22 and 23. Such frame members 17 and 18 taper inwardly toward one another rearwardly of the apparatus and their rear ends are connected together by a transversely extending rear end tubular member 24.

As illustrated both in FIGS. 1 and 2, the forward ends of the ski simulating members 12 and 13 are pivotally secured to the forward end member 21 of the base for pivotal transverse movement of the ski members relative to the base about axes at such forward ends. That is, each of two transversely spaced rods 26 extending vertically upwardly from forward frame end member 21 has a socket ball 27 on its upper end engaged within a socket at the lower end of an associated support pin 28 to provide a ball and socket pivotal connection between the frame and the support pins. The upper end of each of the pins 28 is threaded and extends through a bore on an associated one of the ski simulating members 12 and 13. Nuts 29 threadably received on the upper ends of the pins 28 secure the forward ends of the ski simulating members to the pins 28.

The above described pin and socket connection between the pins and the foot members also allows the tips of the ski members to pivot transversely or sideways to a certain extent. The result is that each of the ski members can be rotated generally about its own longitudinal axis a limited amount.

The ski members 12 and 13 are supported by a forwardly sloping inclined position by a transversely extending bar or rod 30 which engages the underneath surface of each of the ski members adjacent its rear end. The bar 30 is mounted to the base for vertical adjustment relative thereto so that the angle of inclination of the ski members can be varied. More particularly, each end of bar 30 is secured to a vertically downward extending tubular post 31 which telescopically receives through its lower end an upwardly extending rod 32 secured to an associated one of the side frame members 22 and 23. Each of the rods 32 has a plurality of vertically spaced bores 33 extending therethrough, and each of the posts 31 has a corresponding bore adapted to register with respective ones

of the bores 33 upon selected positions of vertical adjustment of the post 31 relative to the post 32. A removable pin 34 traverses the bore through each of the tubular posts 31 and one of the bores through each of the posts 32 to maintain the bar 14 at a desired height. By removing the pins 34 and aligning the bore of each of the tubular posts with another one of the bores of the associated post 32 before replacing the pin, the height of the bar 14 will be changed. Thus, different ski slope angles can be reproduced.

Spring means is provided in compression between the support pins 28 to pivot the same outward away from one another and, hence rotate ski members 12 and 13 outwardly with respect to each other about their longitudinal axes. More particularly, a compression spring 36 has each of its ends 37 and 38 respectively secured to pins 39 and 41 which are welded or other wise secured to their associated support pins 28 to extend transversely inward therefrom. The spring 36 thereby acts to rotate the ski members about their longitudinal axes as best depicted in FIG. 2. Thus, a user must maintain the ski members with their upper faces generally horizontal against the pressure of spring 41 to stand comfortably on the skis. The resulting force on the skiers angles and lower legs strengthens the same and places them in condition to undergo the rigorous exercise to which they are put during actual skiing.

Spring means are also provided for resisting any transverse movement of the ski members from a position extending longitudinally of the base. In this connection, each of the ski members 12 and 13 is provided at its rear end with a vertically extending plate 46 which has a downwardly extending tab 47 through which is provided an aperture. A pair of springs 51 couple the ski members to the rear end frame member 24 by each having one of its ends secured by a ring 52 to one of the tabs 47, and having its other end secured by a similar ring 53 to one of a plurality of the apertures in a plate 48 extending vertically upward from frame member 24. As will be understood more fully in the description of the use of the apparatus, the provision of a plurality of holes in plate 48 permits a plurality of springs to be used to couple each of the ski members to the frame end member to thereby increase the resistance to movement of each ski. Moreover, this provision of a plurality of holes in plate 48 allows selective positioning of the lower end of the springs 51 transversely of the apparatus to also vary the tension.

Each of the ski members also includes conventional bindings 56, desirably ski boot bindings, for securing the foot of a user thereto. A waistband 57 to be secured about the waist of a user is secured to each of the ski members 12 and 13 by a pair of tension springs 58. In this connection, the plate 46 at the rear of each of the ski members includes an upwardly extending portion having a plurality of holes spaced transversely thereacross. The springs 58 are secured to each of the ski members by means of the holes through the plate in a manner similar to the manner in which the springs 51 are secured between the tabs 47 and the foot member 24.

Operation

One desiring to exercise and train on the apparatus can first adjust the angle of inclination of the skis to a desired angle by vertically adjusting the slide bar as discussed above. If desired he can also adjust the resistance the skis will offer to transverse movement by adding or removing springs from between the skis and the rear frame member 24. Depending upon his weight, he may also wish to adjust the tension securing the waistband 57 to the rear end of the skis by substituting other springs in place of springs 58 or by increasing or reducing the number of springs 58.

To train and exercise, the user can then secure his feet to the ski members and secure the waistband 57 around his waist as shown in phantom in FIG. 1. As has been brought out before, to stand correctly the user will have to rotate each of the ski members inwardly with his legs against the of the spring 36. The force of spring 36 will then aid in strengthening the ankles and lower legs of the user as he undergoes the movements discussed below. It is preferable that the user hold conventional ski poles or some substitute therefor to assure his balance during the exercising and training.

The user of the apparatus is then ready to make the many different movements he is making during actual skiing. For example, he can separate his skis as depicted in in FIG. 3 and as he would do if he were snow plowing. Both the springs 51 and the springs 58 extending between the skis and the frame, and the skis and the user's waist, respectively, could resist this movement. This resistance would simulate the resistance a skier would find when actually snow plowing on snow, as well as exercising the muscles the skier would utilize in undertaking this maneuver.

The skier can also practice and exercise for stem christie and parallel turns. That is, by undergoing the appropriate body movements, he may slide the skis transversely back and forth on slide bar 48 as is indicated in FIG. 4. To facilitate such movement, it should be noted from FIG. 5 that the underneath surface of the ski members at the location at which they rest upon bar 14 are generally convex and include inserts 59 of a low friction material such as hard fiberglass. The springs 51 will resist this back and forth motion to aid in the exercising of the muscles used by the exerciser in undergoing the motion as well as simulate the resistance provided by the snow to such movement. In making either of these skiing maneuvers, the skier should be flexed or leaning forward so that his center of gravity is toward the forward end of the skis. In so leaning forward, the skier will place in tension the springs 58 coupling waistband 57 to the ski members. The resulting upper force on the rear end of the skis will tend to counteract any unnatural downward force on such skis caused by the springs 51. Moreover, the skier can practice forward flexing on the skis and the springs 58 will exercise the appropriate muscles he would use to do so in skiing.

From the above, it will be appreciated that the apparatus of the invention is designed to enable a user to undergo all of the many maneuvers one would make during skiing, and thereby to practice such maneuver and exercise the muscles which cause them. The springs provide, in combination, a resilient resistance to the maneuvers to aid in the exercising and the simulate the conditions a skier will encounter during actual snow skiing.

I claim:

1. A ski exercising and training apparatus comprising a base, a pair of adjacent elongated ski representing members mounted on said base with their forward ends pivotally secured thereto for pivotal movement of said members transversely relative to said base, a transversely extending slide member located rearwardly of said forward ends and said ski members being supported thereon for said movement, bindings on said ski representing members for securing the feet of a user thereto, spring means coupling each of said ski members to said base rearwardly of said forward ends to provide resilient resistance to said transverse movement of said ski members relative to said base, a waistband for securance about a waist of a user, and tension spring means securing said waistband to each of said ski members rearwardly of said bindings.

2. The ski exercising and training apparatus of claim 1 wherein the forward end of each of said elongated ski members is pivotally secured to said base for rotational motion generally about its own longitudinal axis in addition to said pivotal movement transversely of said base, and wherein spring means is provided resiliently urging rotation of each of said ski members about its own longitudinal axis in a direction outward with respect to one another.

3. The ski exercising and training apparatus of claim 2 wherein the bottom surface of each of said ski members at the point of its support by said slide member is generally convex to facilitate said motion about its own axis and includes an insert of a low friction material to facilitate said pivotal movement.

4. The ski exercising and training apparatus of claim 3 wherein said ski members are mounted on said base at a forwardly sloping incline relative thereto, the height of said transversely extending slide member being selectively adjustable to permit variation in the angle of inclination at which said ski members are supported by said slide member.

5. A ski exercising and training apparatus comprising a base, a pair of adjacent elongated ski representing members mounted on said base with their forward ends pivotally secured thereto for pivotal movement of said members transversely relative to said base, a transversely extending slide member located rearwardly of said forward ends and said ski members being supported thereon for said movement, bindings on said ski representing members for securing the feet of a user thereto, the forward end of each of said elongated ski members being pivotally secured to said base for rotational motion generally about its own longitudinal axis in addition to said pivotal movement transversely of said base, and spring means resiliently urging rotation of each of said ski members about its own longitudinal axis in a direction outward with respect to one another.

6. The ski exercising and training apparatus of claim 5 wherein the bottom surface of each of said ski members at the point of its support by said slide member is generally convex to facilitate said motion about its own axis.

7. A ski exercising and training apparatus comprising a base, a pair of adjacent elongated ski representing members pivotally mounted adjacent the forward ends thereof on said base for pivotal movement with respect thereto in transverse directions, means supporting said ski members adjacent their rear end portions accommodating said pivotal movement thereof, means operative between said base and ski members for resisting such transverse movement of said ski members, said ski members also being supported with respect to said base for rotational motion with respect thereto generally about their respective longitudinal axes and spring means urging each of said ski members toward a predetermined rotational orientation about its longitudinal axis to bias said ski members toward such predetermined position of rotational orientation.

8. The ski exercising and training apparatus of claim 7 and further comprising a waistband for securance about the waist of one standing upon said ski members, and tension spring means securing said waistband to each of said ski members adjacent the rear end portions thereof.

9. The ski exercising and training apparatus of claim 7 in which the aforesaid means supporting said ski members adjacent the rear end portions thereof enforce a forwardly sloping incline thereon relative to said base, and further comprising bindings on said ski members intermediate the end portions thereof for securing the feet of user thereto.

10. The ski exercising and training apparatus of claim 9 in which the aforesaid means for supporting said ski members adjacent the rear end portions thereof includes a transversely extending slide member receiving and supporting said ski members thereon, and in which the bottom surface of each of said ski members along the area of its engagement with said slide member is generally convex to facilitate the aforesaid rotational motion of said ski members about their longitudinal axes.