

[54] **EXERCISE APPARATUS FOR SKIERS**

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[58] Field of Search **272/57 R, 57 B, 58, 83 R**

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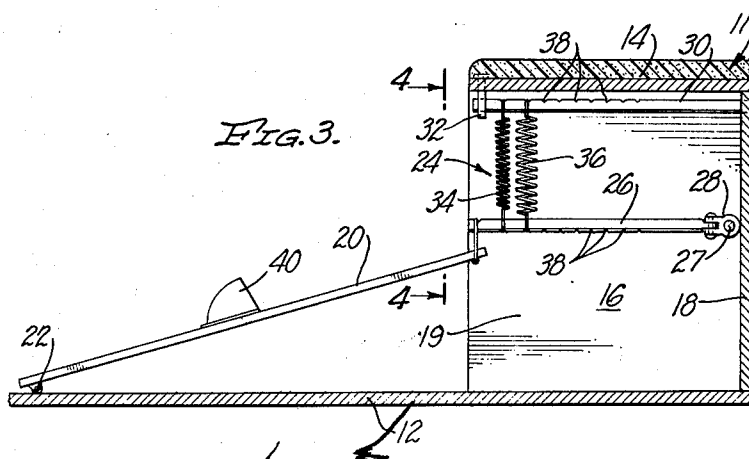
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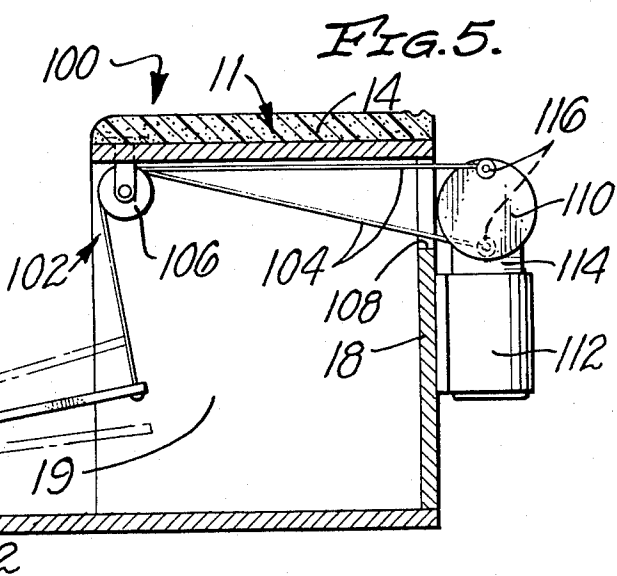
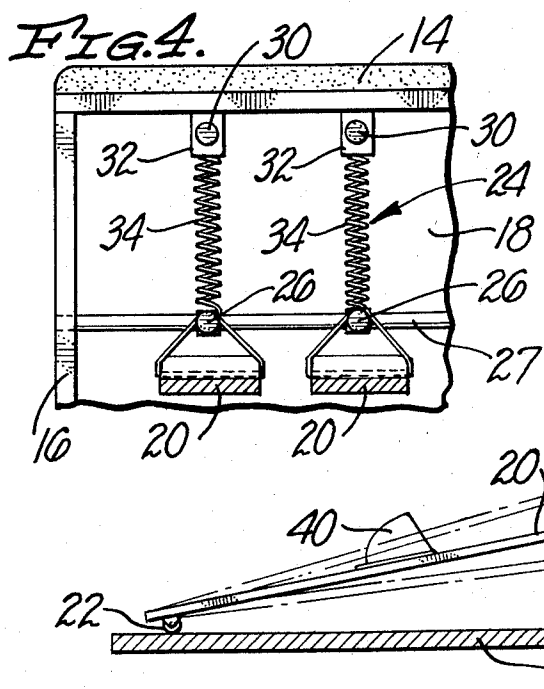
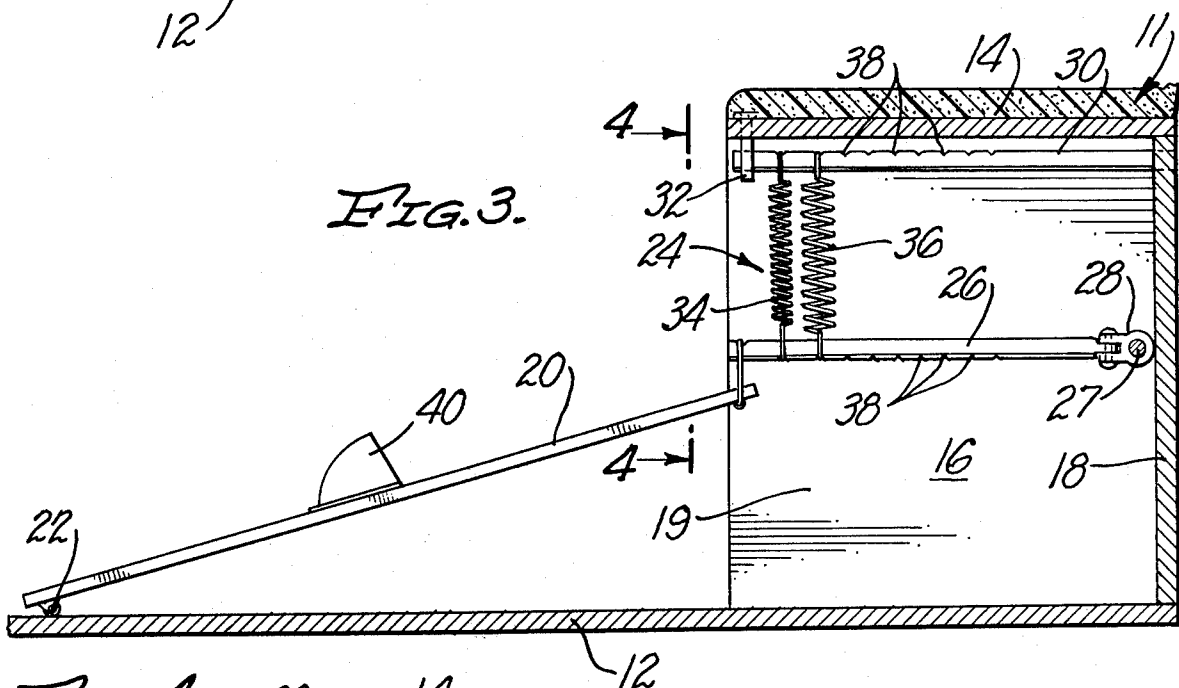
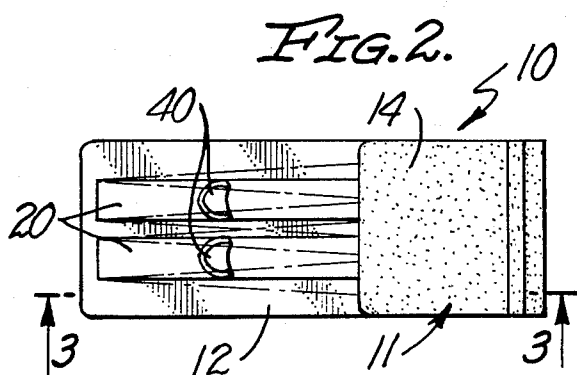
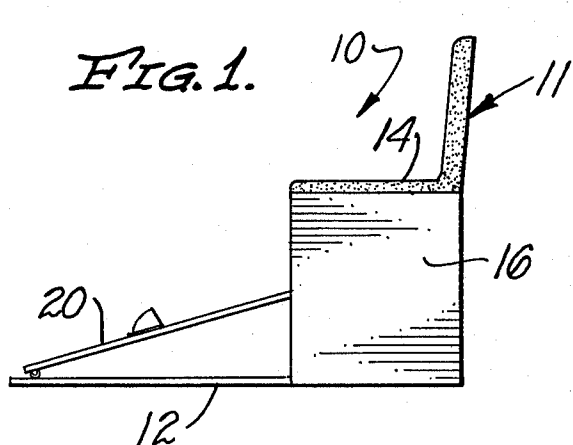
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[57] **ABSTRACT**

An exercise device for developing skiers' leg muscles which are used when skiing in the so-called "sitting" position. The device includes a pair of simulated skis having their front ends resting on the floor and their rear ends supported in an elevated position from a chair for movement from side to side as well as up and down against the resistance of an opposing yieldable force or a periodic positive elevating force. The user sits in the chair or stands with his feet positioned in foot receptacles on the skis and moves his legs and feet in a twisting and/or up and down motion to move the rear ski ends from side to side and/or up and down against the resistance of the opposing force.

11 Claims, 5 Drawing Figures





EXERCISE APPARATUS FOR SKIERS

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates generally to the art of snow skiing and more particularly to an exercise device for developing the leg muscles which are used when skiing in the so-called "sitting" position.

Snow skiing requires great agility and muscular control, particularly in the legs. The leg muscles which are used most and require the greatest development vary from one skiing position to another. One skiing position which requires certain highly developed leg muscles is referred to as a "sitting" position for the reason that it resembles the position assumed by a skier when sitting in a chair and fastening or fitting his skis. This position is commonly used in steep down hill skiing involving abrupt turns and is one in which the skier's knees are bent almost at right angles with his thighs extending rearwardly over the skis and his torso inclining forwardly. Skiing in this position involves many controlled body motions including flexing of the knees and twisting as well as vertical movement of the legs to elevate and swing the rear ends of the skis from side to side for turning.

SUMMARY OF THE INVENTION

The present invention provides an exercise device for developing the leg muscles which are used when skiing in the "sitting" position. The device includes a pair of slats simulating skis extending forwardly from a chair with the front ends of the skis resting on the floor, which may be a base or platform on which the chair is mounted. The rear ends of the skis are supported in an elevated position from the chair for movement up and down as well as from side to side against the resistance of an opposing force. The skis have foot receptacles.

The user sits in the chair or stands with his feet in the foot receptacles of the skis and moves the rear ski ends up and down and/or from side to side by twisting and up and down motion of his legs. These leg motions are resisted by the opposing force on the skis in such a way that the appropriate leg muscles are developed or strengthened.

Two different embodiments of the exercise device are described. In one, the rear ends of the skis are supported on the chair by an adjustable spring suspension system which exerts on the skis a yieldable resisting force opposing the user's leg movements. In the other described embodiment, the rear ski ends are supported on the chair by a motor driven reciprocating cable mechanism which exerts a periodic positive elevating force on the skis for resisting or opposing the user's leg movements.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevation of an exercise device according to the invention;

FIG. 2 is a top view of the device;

FIG. 3 is an enlarged section taken on line 3—3 in FIG. 2;

FIG. 4 is a section taken on line 4—4 in FIG. 3; and

FIG. 5 is a fragmentary vertical section through a motorized exercise device according to the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The exercise device 10 of FIGS. 1—4 has a chair 11 supported on a base 12. Chair 11 has a seat 14, and sides 16 and a back 18 which extend down to the base 12. The sides and back define a forwardly opening space 19 below the seat.

Extending forwardly from the chair 11 are a pair of slats 20 simulating and referred to herein as skis. The front ends of the skis 20 rest on the base 12 for movement back and forth along the base and may mount rollers 22 for easier back and forth movement. At this point it should be noted that the base could be eliminated to permit the skis to rest directly on the floor. However, to avoid marring of the floor or the resistance imposed by a carpet on the floor, the skis preferably rest on the base, as shown. This base then serves as a substitute floor and may be referred to as a floor.

The rear ends of the skis 20 are supported in an elevated position from the chair 11 by means 24 which permit movement of the rear ends up and down as well as from side to side and provide a resisting force opposing such movement. The illustrated supporting means 24 comprises an adjustable spring suspension including a pair of supporting arms 26 extending fore and aft through the lower chair space 19. The rear ends of these arms are attached to a rod 27 extending across the rear side of the space by compound hinges 28 which permit the arms to swing up and down and from side to side. Above the arms 26 are a pair of fixed support bars 30 whose rear ends are fixed to the chair back 18 and front ends are attached by brackets 32 to the underside of the chair seat 14. Extending between and fixed at their ends to the arms 26 and bars 30 are springs 34 and 36. The lighter spring 34 may be fixed in position. The heavier spring 36 may be adjustable along the arms and bars. To this end, the arms and bars have notches 38 for receiving the spring ends.

Skis 20 have foot receptacles 40. The receptacles shown are simple cups for receiving the toes of the user's shoes.

The user sits in the chair 11 or stands with his feet in the foot receptacles 40 and moves his legs and feet with an up and down motion to move the rear ends of skis 20 up and down and with a twisting motion to move the rear ends of the skis from side to side against the resisting force of the springs 34, 36. These motions may be performed individually or in combination to exercise and thereby develop the leg muscles which are used when skiing in the "sitting" position. The resisting force produced by the springs may be adjusted by repositioning the large spring 36.

The modified exercise device 100 of FIG. 5 is similar to that just described except for the means 102 which supports the rear elevated ends of the skis 20 on the chair 11. In this case, the supporting means comprises a motor driven, reciprocating cable mechanism including a pair of cables 104, each attached at one end to the rear end of a ski. Cables 104 extend upwardly from the skis to pulleys 106 attached to the underside of the chair seat 14 and then around the pulleys and rearwardly through the lower chair space 19 and an opening 108 in the chair back 18 to a rotary crank disc 110. Crank disc 110 is rotatably supported by a motor 112 attached to the rear side of the chair back 18 and is driven by the motor through a gear reducer 114. Cables

104 are attached by pivots 116 to diametrically opposite points of the disc. Accordingly, when the motor 112 is operating, the rear ends of the skis 20 raise and lower in alternate fashion.

The modified exercise device 100 is used in much the same manner as the first described exercise device except that the user effectively resists the motorized motion of the skis rather than actually producing such motion.

I claim:

1. Exercise apparatus for skiers comprising:
a chair,
a pair of simulated skis at the front side of said chair including ski-like slats extending forwardly and downwardly from said chair and foot cups between the ends of said slats, and
means supporting the rear ends of said ski slats on said chair for movement of said rear slat ends in directions transverse to said slats.
2. Exercise apparatus according to claim 1 wherein: said rear slat ends are movable vertically.
3. Exercise apparatus according to claim 1 wherein: said rear slat ends are movable horizontally.
4. Exercise apparatus according to claim 1 wherein: said rear slat ends are movable both vertically and horizontally.
5. Exercise apparatus according to claim 1 wherein: said supporting means comprise springs connected between said chair and rear slat ends.
6. Exercise apparatus according to claim 1 wherein: said chair has a seat and a forwardly opening space below said seat, and
said supporting means comprise a pair of supporting arms extending fore and aft through said seat

space, universal pivot means securing the rear ends of said arms to said chair for swinging of said arms both horizontally and vertically, springs connecting the forward ends of said arms to said seat, and means securing the rear ends of said ski slats to the forward ends of said arms.

7. Exercise apparatus according to claim 6 including: means for adjusting said springs along said arms.

8. Exercise apparatus according to claim 7 wherein: said apparatus includes a base panel extending forwardly from said chair below said simulated skis, and

rollers on the undersides of the front ends of said ski slats adapted to roll along said panel as the rear ends of said slats move vertically.

9. Exercise apparatus according to claim 1 wherein: said supporting means include means for driving the rear ends of said ski slats in said transverse directions.

10. Exercise apparatus according to claim 1 wherein: said supporting means comprise cables.

11. Exercise apparatus according to claim 1 wherein: said chair has a forwardly opening space below said seat, and

said supporting means comprise pulleys secured to the underside of said slat within said chair space, cables secured to the rear ends of said ski slats and extending upwardly over and around said pulleys and then rearwardly through said chair space, and power actuated means secured to the rear ends of said cables for alternately pulling said cables rearwardly through said chair space and releasing said cables for movement forwardly through said space.

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