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[54] TRAINING APPARATUS FOR SKIERS

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[63] Continuation-in-part of Ser. No. 827,665, May 26, 1969, abandoned.

[30] **Foreign Application Priority Data**

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[51] **Int. Cl.** **A63b 69/18**

[58] **Field of Search** ..... 272/57 B; 104/62; 35/29 R, 29 E; 128/25 R, 25 B

[56] **References Cited**

UNITED STATES PATENTS

3,467,374	9/1969	Auer	272/57 B
3,461,857	8/1969	Poulin	272/57 B X
3,364,875	1/1968	Bilaisis	272/57 B X
2,455,274	11/1948	Scriver	35/29 R UX

FOREIGN PATENTS OR APPLICATIONS

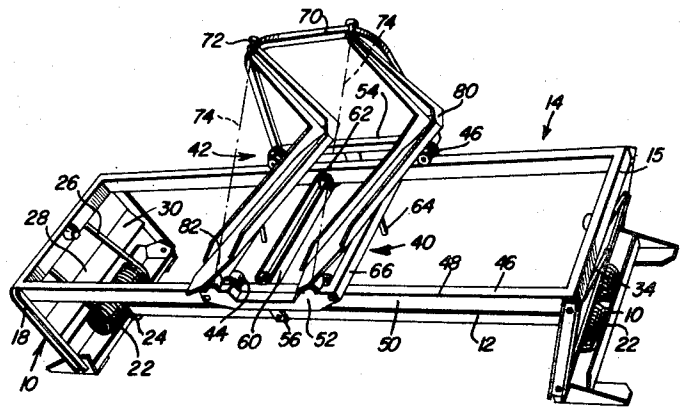
385,085	5/1965	Switzerland	272/57 B
675,742	7/1952	Great Britain	272/57 B

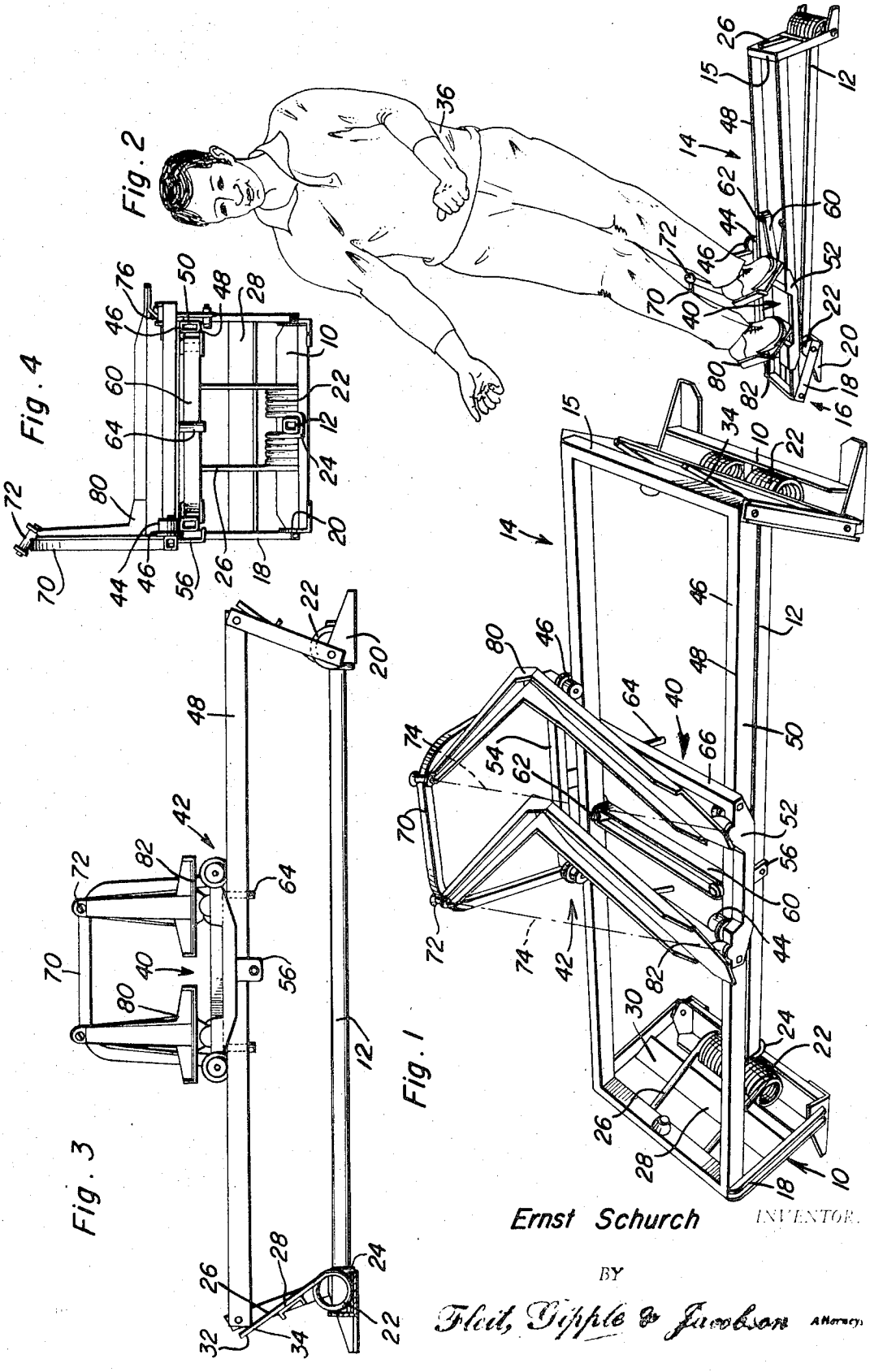
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[57] **ABSTRACT**

A sliding carriage equipped with separate removable pedals disposed on a rocking-frame engaged against the force of a spring slanting toward its smaller ends while the carriage is moving out of the middle of the rocking-frame against the elasticity of a rubber strip.

7 Claims, 4 Drawing Figures





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TRAINING APPARATUS FOR SKIERS

This application is a continuation-in-part of application, Ser. No. 827,665, filed May 26, 1969, for TRAINING DEVICE, now abandoned.

BACKGROUND OF THE INVENTION

Despite the increasing popularity of skiing, the necessary training and physical conditioning is neglected by many beginners for lack of convenient training facilities. The consequences are insufficient conditioning and poor skiing technique, causing untimely fatigue and lack of control by the skier so that his own safety and that of other skiers is abridged. One group of training devices built heretofore is self-propelled (the trainee puts the device into motion himself), while a second group has been built utilizing an electrical drive. Devices without outward impetus are quite useful for a general health training; however, they cannot simulate realistically enough the sequences of actual skiing motions,which unfortunately results in the trainee picking up incorrect habits. Devices with external impetus simulate better the real sequences of skiing motions, but are incumbered by their high cost and the fact that the conditioning of the trainee is reduced because the trainee is not able to apply his own impetus in a manner similar to that which is necessary when skiing. Furthermore, all prior art devices require a considerable amount of space.

SUMMARY OF THE INVENTION

This invention relates to a training device which simulates actual skiing in order to improve the beginning skier's form and body conditioning. The simulation is obtained by a sliding carriage, equipped with two separately movable pedals, which is disposed on a rocking-frame which is tiltable at one end or the other thereof against a resilient force provided by a spring at each end thereof while the carriage slidably moves to one end or the other of the rocking-frame by means of an elastic element which pressedly engages the carriage for reciprocal movement about the center of the rocking-frame.

Accordingly, a primary object of this invention is the combination of independent motions of a tilting rocking-frame, a sliding carriage, and pivotally movable pedals which accomplish a rhythmical conditioning of the trainee in a harmonical manner so that all three motions realistically simulate the natural feel of actual skiing. The pedals are pivotally arranged on an oblique level to simulate on one side the canting of the skis against the slope and bestow on the other side the feeling of a change of direction caused by the swing around a fictitious center.

Another object of this invention is to provide a small, compact, efficient, and inexpensive training unit.

BRIEF DESCRIPTION OF THE DRAWING

The above and other objects of this invention will become apparent to those skilled in the art after a consideration of a detailed description of a preferred embodiment of this invention taken together with the accompanying drawing wherein:

FIG. 1 is a perspective view of the apparatus;

FIG. 2 is a perspective view thereof while being used;

FIG. 3 is a side elevational view thereof with a cross-section of the spring; and

FIG. 4 is a cross-sectional view looking at one end thereof.

DETAILED DESCRIPTION

Referring in detail to the drawing, there is shown a pair of base supports 10 with a center bar 12 connected therebetween. A rectangular rocking-frame 14 is pivotally mounted at each longitudinal end 15 thereof to one of base supports 10 by means of an "I" frame 16 having the end legs 18 thereof pivotally connected to ends 15 of frame 14 and the ends 20 of support 10. Each support 10 has a spring 22 mounted thereon with one end 24 of spring 22 in pressed engagement against the bottom of bar 12 and the other end 26 thereof being parallel with the plane in which a longitudinal shaft 28 of "I" frame 16 is lying and adjacent the inside surface 30 thereof, a terminal portion 32 of other end 26 of spring 22 being pressedly engaged against the outer bottom edge 34 of end 15 of frame 14. A physical relationship of spring 22, support 10, bar 12, longitudinal shaft 30, and frame 16 may be clearly seen in the lefthand side of FIG. 3, which discloses a cross-section of the spring mechanism.

Other ends 26 of springs 22 exert equal forces against edges 34 tending to pivot ends 15 toward each other, one end 15 being pressed for pivotal movement in a clockwise direction about a base support 10 while the other end 15 being pressed for pivotal movement about the other base support 10 in a counterclockwise direction. Since both springs 22 exert an equal force in opposing directions, the force thereof is cancelled out, and rocking frame 14 is thereby pivotally centered directly above base supports 10 and bar 12 when the training apparatus is not being used. As can be seen in FIG. 2, when the weight of a person 36 is applied at one end of rocking-frame 14, "I" frames 16 and ends 15 will both pivot counterclockwise about base support 10 together with the ends 26 of springs 22, one end 26 of which (the left-hand spring 22 shown in FIG. 2) will exert a resilient force pivotally about base support 10 in the clockwise direction. Likewise, if the user 36 is on the right-hand end of rocker-frame 14, "I" frames 16 and ends 15 will be pivoted in the clockwise direction about base supports 10 with the other end 26 of the right-hand spring 22 exerting a reciprocal force against edge 34 pivoting end 15 back in a counterclockwise direction about base support 10.

A rectangular carriage 40 rollably mounted on rocking-frame 14 by means of rollers 42, each having a reduced diameter wheel 44 engaging the top surface 46 of one of the sides 48 of rocking-frame 14 and a larger diameter wheel 46 adjacent the outside surface 50 of side 48 of rocking-frame 14. A pair of rollers 42 are rotatably mounted to one side 52 of carriage 40 and a pair of rollers 42 are rotatably mounted to the other side 54 of carriage 40, an L-shaped guide 56 projecting downward from sides 52 and 54 and being bent underneath corresponding sides 48 of rocking-frame 14.

An elastic strip 60 is stretched between sides 48 of rocking-frame 14 by means of vertical holders 62 spacedly secured to sides 48 at the longitudinal center thereof. A projection 64 extends downward from the center point of each end 66 of carriage 40 to an extent so that the bottom of each projection 64 is at a vertical level below the bottom of elastic strip 60. As clearly shown in FIG. 2, as user 36 is moving carriage 40

toward one end of rocking-frame **14**, one of the projections **64** will physically engage the center of elastic strip **60** and stretch it in the direction in which carriage **40** is moving. At a certain point, elastic strip **60** will be stretched to an extent where it will allow no further movement towards the end of rocking-frame **14** at which time the resilient force of the stretched-out elastic strip **60** will pull projection **64** and carriage **40** back towards the other end of rocking frame **14** past the center thereof. After moving past the longitudinal center of rocking-frame **14**, the other projections **64** will make physical contact with elastic strip **60** and will then pull carriage **40** back to the original direction after being stretched to a certain point in the same manner as already discussed.

Extending upward from side **54** of carriage **40** is a vertical loop support **70**. A pair of bearing elements **72** have their longitudinal axes **74** parallel with each other and at an angle with the longitudinal axes of ends **66** of carriage **40**. A pair of bearing elements **76** are secured to side **52** of carriage **40** at an angle to coincide with axes **74**. A pair of L-shaped pedals **80** are pivotally connected to bearing elements **72** and **76** in a manner so that pedals **80** rotate about axes **74**, as shown in FIGS. **1** and **2**, and have the bottom leg **82** thereof parallel with the ground upon which base supports **10** are mounted when not in use, as clearly shown in FIGS. **3** and **4**. Axes **74** are parallel to one another in fixed distance and lie in the same inclined plane making an acute angle of approximately 30° with the ground upon which base supports **10** are mounted for best results and realistic simulation.

The apparatus realistically simulates the actual motions of skiing due to the fact that the device allows the user to tilt and slide away from the direction in which he is turning toward and assume the proper body angle and stance in relation to the simulated turn which the user is making in the same manner that the skier would actually balance his body and skis due to the independent and harmonious tilting, sliding, and pivoting movements of rocker-frame **14**, carriage **40**, and pedals **80**, respectively.

While a preferred embodiment of this invention has been illustrated and described, it should be understood by those skilled in the art that many changes and modifications may be resorted to without departing from the spirit and scope of the invention.

I claim:

1. A training apparatus for skiers which serves to improve skiing capabilities and as a general physical training aid, comprising: a base; a rocking frame pivotally mounted on said base; resilient means mounted on said base and positioned to oppose the outward pivotal movement of said rocking frame; elastic means attached to said rocking frame; a carriage rollably mounted on said rocking frame and positioned to be movable from the center of said rocking frame toward the ends thereof against the restoring force of said elastic means; and foot pedals each independently mounted on said carriage for rotation about an oblique axis relative to said rocking frame.

2. The apparatus of claim **1** in which the rocking frame is rectangular in shape and has both longitudinal ends pivotally mounted on the base.

3. The apparatus of claim **1** in which the resilient means comprise springs mounted on the base and having one end engaging the rocking frame to oppose the outward pivotal movement of said rocking frame.

4. The apparatus of claim **1** in which the elastic means is a stretchable element attached at the longitudinal center of the rocking frame.

5. The apparatus of claim **1** in which means are attached to the carriage which project therefrom and engage the elastic means when the carriage is moved toward the ends of the rocking frame.

6. The apparatus of claim **1** in which the axes of rotation of the pedals are spaced a fixed distance apart and extend at right angles to the movement of the carriage and parallel to each other and at an angle of about **30°** with respect to the rocking frame.

7. The apparatus of claim **1** in which the axes of rotation of the pedals extend above the rocking frame and through the plane of said rocking frame at the center of one side of said rocking frame.

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