United States Patent

Aijala

[15] **3,659,842**

[45] **May 2, 1972**

[54] DRY LAND SKI TRAINING DEVICE HAVING A PAIR OF CANTILEVERED ARMS PIVOTALLY MOUNTED ADJACENT THEIR FORWARD ENDS

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[22] Filed: **Jan. 12, 1970**

[21] Appl. No.: **2,052**

[52] **U.S. Cl.** ..... **272/57 B**

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

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

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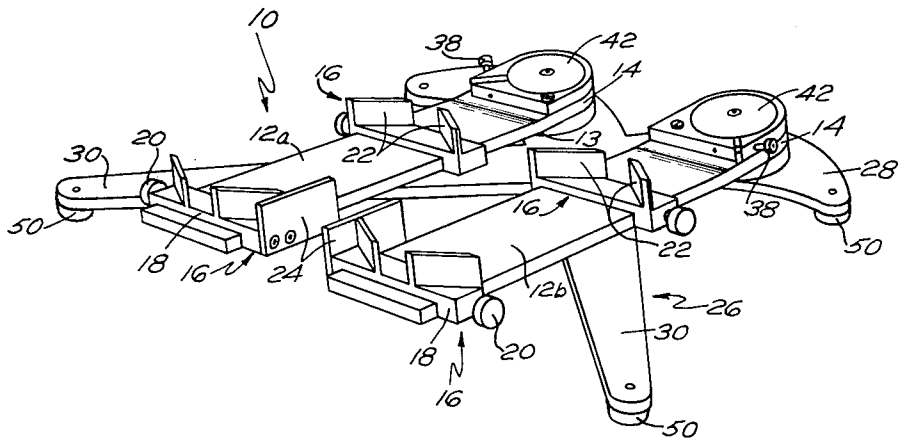
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[57] **ABSTRACT**

A dry land ski training device having a pair of pivotally mounted cantilever arms, each with adjustable foot support brackets mounted thereon, the cantilever arms having a semi-circular section at their forward ends with a hole at the pivot point, the flat bottom surface of the semi-circular section bearing upon the sloped surface of a support post, and the cantilever arms being bent upwardly at a slight angle to extend outwardly from the support post and give the foot brackets a forward slope. Adjustable brakes are attached to the forward end of the cantilever arms to vary the amount of resistance the user of the device will encounter while pivoting the arms back and forth. Means are also provided for adjusting the lateral distance between the forward ends of the arms.

6 Claims, 9 Drawing Figures



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2 Sheets-Sheet 1

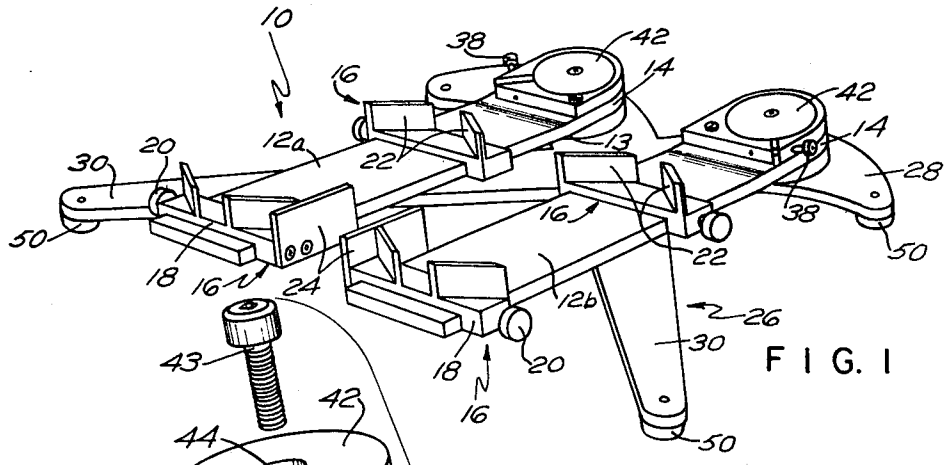


FIG. 1

FIG. 2

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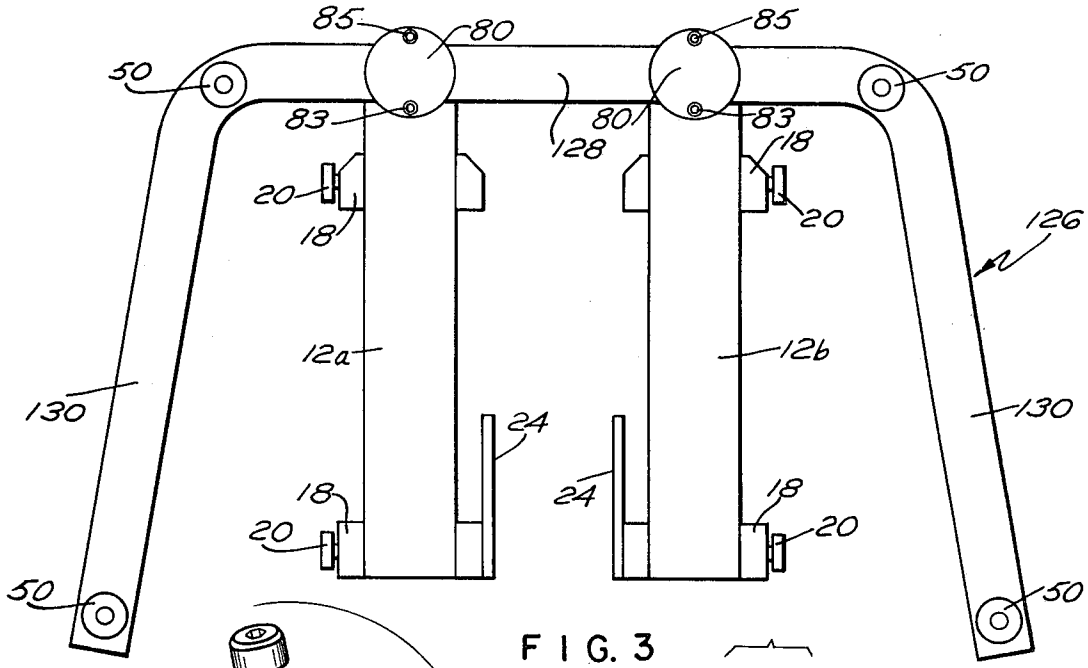


FIG. 3

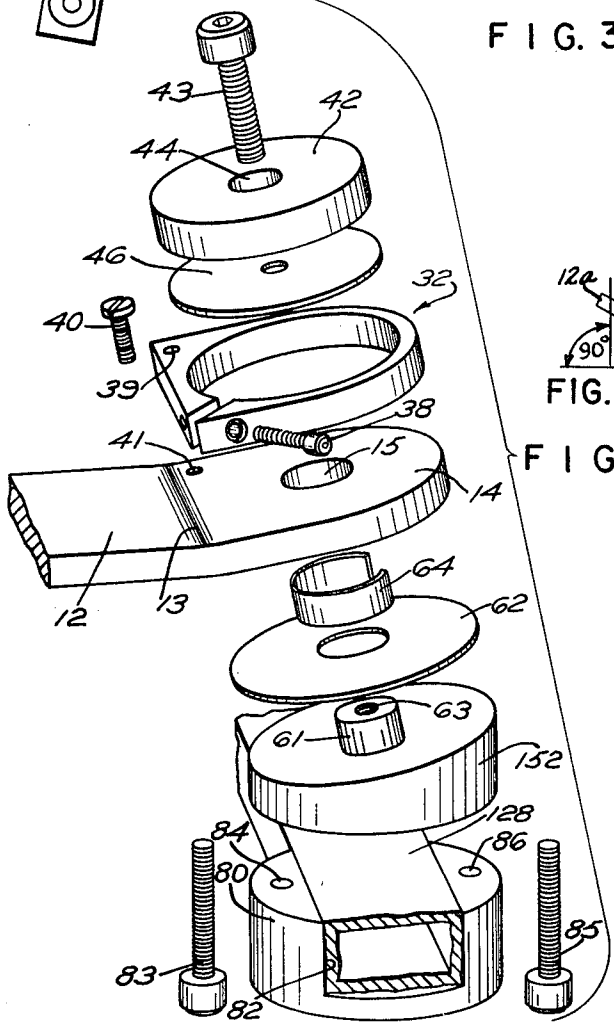


FIG. 4

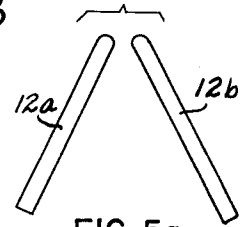


FIG. 5a

FIG. 5b

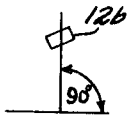


FIG. 5c

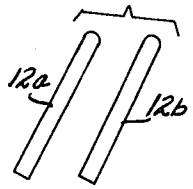


FIG. 6a

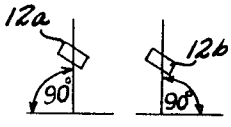


FIG. 6b

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A DRY LAND SKI TRAINING DEVICE HAVING A PAIR OF CANTILEVERED ARMS PIVOTALLY MOUNTED ADJACENT THEIR FORWARD ENDS

BACKGROUND OF THE INVENTION

The invention relates to a device for training and improving the skills of skiers by simulating skiing positions.

In skiing many muscles are used which do not in the ordinary course of living develop to the extent necessary to ski properly. This device is for use in strengthening those muscles used in skiing and for simulating the conditions of actual skiing. Also when learning most new sports, unfamiliar movements are used which must be learned before any degree of proficiency can be exercised. For most skiers, the learning time can be considerably shortened by the use of training devices to strengthen the proper muscles and which familiarize the skiers body muscles with the new movements used in skiing. Various attempts have been made to provide a foot and leg exerciser to strengthen the muscles used in certain torsion movements in skiing which have resulted in rather complicated mechanisms or mechanisms which did not fully achieve the desired results. The more complicated the device, the more expensive it was with the result that only few could afford to purchase them. The present invention requires a relatively uncomplicated mechanism and can be produced to sell at a reasonable price.

SUMMARY OF THE INVENTION

The ski training device permits actual skiing positions and maneuvers to be taught and practiced without the need for a ski slope. A person using the training device adjusts the foot support brackets to his shoe size and then positions his feet in place on the cantilever arms. The cantilever arms are of sufficient tensile strength to support a person without deforming and possess sufficient resiliency to simulate the weighting and unweighting motions performed while skiing. Due to the upward inclination of the cantilever arms, a feeling of actually skiing downhill is created. Different skiing movements may be practiced by moving the foot supports relative to each other. For instance both feet may be pushed outwardly to simulate a "snow plow" movement. The sloped bearing surfaces of the support posts cause the cantilever arms to tilt inwardly during this movement to simulate the movement one would use against the inside edges of his skis to slow one's forward motion. When used to practice "parallel skiing" or "wedeln" the cantilever arms would be kept parallel and swung alternately from left to right to simulate those movements. Again due to the inclination given the cantilever arms when pushed to either side of center position, a movement which simulates "edging" is gained. When using the training device, the user may make use of his poles to maintain better balance and simulate realism. As a person's skill in moving the cantilever arms properly increases, the braking mechanisms may be tightened to produce increased resistance to turning. This increased resistance program develops the necessary muscles involved in the different skiing movements.

It is an object of this invention to provide an economical ski training device which more closely simulates actual skiing movements.

It is also an object of the invention to provide a ski training device which places the turning point of the foot support members forward of said foot support members the same as exists in actual skiing.

It is also an object of the invention to provide a ski training device in which the foot support cantilever arms may be adjusted laterally to vary the distance therebetween as the user's proficiency increases.

A further object is to provide a ski training device capable of developing and strengthening the leg muscles essential to performing ski maneuvers.

DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of the ski training device;

FIG. **2** is a partial view illustrating the structure in FIG. **1** that secures the cantilever arm to the base support with said structure being shown in exploded view;

FIG. **3** is a bottom view of an alternative embodiment which allows lateral movement of the foot support cantilever arms to vary the distance therebetween;

FIG. **4** is a partial view illustrating the structure in the alternative embodiment that secures the cantilever arms to the base support with said structure being shown in exploded view,

FIG. **5***a* is a schematic top plan view of the cantilever arms in the snow plow configuration;

FIG. **5***b* is a schematic rear end view taken along cantilever arm **12***a* of FIG. **5***a;*

FIG. **5***c* is a schematic rear end view taken along cantilever arm **12***b* of FIG. **5***a;*

FIG. **6***a* is a schematic top plan view of the cantilever arms in a parallel position;

FIG. **6***b* is a schematic rear end view taken along cantilever arms **12***a* and **12***b* of FIG. **6***a.*

DESCRIPTION OF THE PREFERRED EMBODIMENT

As best described in FIG. **1**, the ski training device is generally indicated by the numeral **10**. Mounted upon each of the cantilever arms **12** is a pair of foot support brackets **16**. Each has a C-shaped support member **18** which is slidably mounted thereon and which can be locked in position by means of a set screw **20**. Foot guide plates **22** are mounted vertically atop the C-shaped support members **18** and positioned thereon to form guides for ends of a shoe placed therebetween. Along the inside edges of the rearward foot support brackets **16** are mounted protective plates **24** to prevent the foot support brackets from crashing into the oppositely supported foot of the exerciser when the cantilever arms are pivoted excessively. The base of the training device is indicated generally by the numeral **26** and is generally in the shape of two crossed skis and formed of two front legs **28** and two rear legs **30**. The base, however, may be of any other configuration which would prevent the ski training device from tipping over during use.

Referring now to FIG. **2**, the mechanism employed for pivotally securing the cantilever arms **12** to the front legs **28** of the base is shown in a detached exploded view. The cantilever arms are bent upwardly at point **13** to give the exerciser a feeling of going down a slope. The forward end of the cantilever arm has a tip formed in the shape of a semi- circular section **14** and having a bore **15**. Mounted atop the forward section **14** is a brake **32** formed with spread fingers **34** and **35** having aligned threaded holes **33** and **36** through which screw **38** is passed to tighten and loosen the brake's grip on circular cap **42**. The brake **32** is attached to the forward end of the cantilever arm by means of screw **40** which threads into holes **39** and **41**. A disc bearing **48** rests between the top of section **14** and under surface of cap **42**. The cap screw **43** has its head tightly engaged in the bore **44** of cap **42** so it will not turn therein and cap **42** sets within the aperture formed by the fingers **34** and **35** of the brake.

Looking now at the structure beneath the cantilever arm, shown best in FIG. **2**, the forward leg **28** has a foot cushion **50** mounted thereunder. Attached to the top of the leg is a short support post **52** having an inclined top surface **54**. The support post is attached to the top of leg **28** by means of screws **55** and **56** passing through counter bores **57**, **58** and threadedly attached in holes **59** and **60** respectively. A disc bearing **62** passes over hub **61** and rests on the inclined top surface of the support post. A split sleeve bearing **64** is located between bore **15** of the cantilever arm and hub **61** as they are assembled. The lower end of cap screw **43** is tightened into the screw threaded bore **63** to draw all the elements together. Once assembled, the brake may be adjusted to vary the frictional resistance that it will be necessary to overcome to swing the cantilever arm through simulated skiing motions.

An alternative embodiment is disclosed in FIGS. 3 and 4 which allows the foot support cantilever arms **12** to be displaced laterally with respect to each other along the central connecting member **128** of the supporting base **126**. The supporting base **126** is generally U-shaped and has arms **130** attached to the outer ends of central connecting member **128**. As the user's proficiency increases the distance between the foot support cantilever arms can be decreased in a manner best described by looking to FIG. **4**. Here in the drawing, cylindrically shaped clamping block **80** has channel groove **82** in its top surface which engages the center connecting member **128** of the base. Clamping blocks **80** may be slid along the connecting member to any desired position to vary the distance therebetween. Screws **83** and **85** are then inserted through holes **84** and **86** respectively and tightened into aligned threaded holes in the bottom of support post **152**. The foot support cantilever arms may thus be positioned anywhere along the connecting member **128**. All the additional structure attached atop the supporting post **152** is similar to that used in the embodiment described in FIG. **2**.

Referring to FIGS. **5***a*, **5***b*, **5***c* and **6***a* and **6***b*, respectively, it is illustrated schematically how the cantilever arms **12***a* and **12***b* of the training device would appear when practicing the snow plow and parallel skiing positions. The different views shown are both top plan and end views to illustrate how the ski edges should be positioned in the aforementioned maneuvers.

I claim:

1. A ski training device for simulating the motions of actually skiing comprising a base, a pair of cantilever arms, each having a forward section and a rearward section, adjustable foot support brackets mounted on each of said cantilever arms, means at the forward section of said cantilever arms for pivotally securing said arms to said base, said cantilever arms being bent upwardly adjacent to and rearwardly of said pivotally securing means to give the person standing in the foot support brackets a forwardly inclined position.

2. A ski training device as recited in claim **1** wherein each adjustable foot support bracket is comprised of a support member having vertical foot guide plates mounted thereon, the support members being slidable along the length of the arms and having means to fixedly position the support members to the arm.

3. A ski training device as recited in claim **1** wherein the means for pivotally securing the cantilever arms to the base comprises brake means for adjusting the amount of resistance to the cantilever arms pivotal movement with respect to the base.

4. A ski training device as recited in claim **1** wherein the base has a support post mounted thereon, the top surface of the post being inclined from front to rear to provide a sloped bearing surface upon which the forward section of the cantilever arms pivots.

5. A ski training device as recited in claim **1** wherein the means for pivotally securing said cantilever arms to said base comprises means to adjust the lateral distance between said cantilever arms.

6. A ski training device as recited in claim **1** wherein the base is generally U-shaped and said cantilever arms are pivotally mounted to the connecting member of the base.

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