Aug. 4, 1970 L. GOLD ET AL 3,522,953

EXERCISING APPARATUS

Filed Oct. 29, 1968

FIG.1

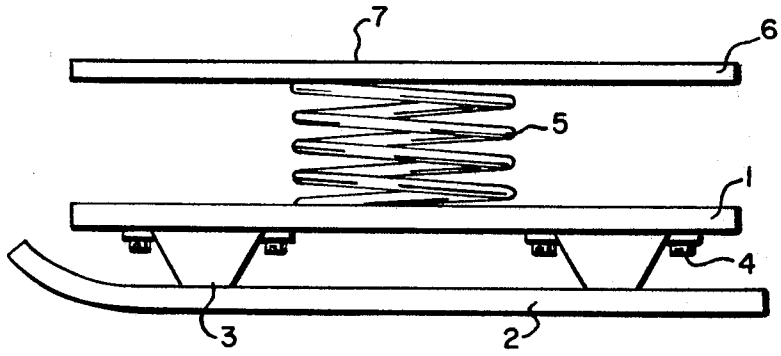
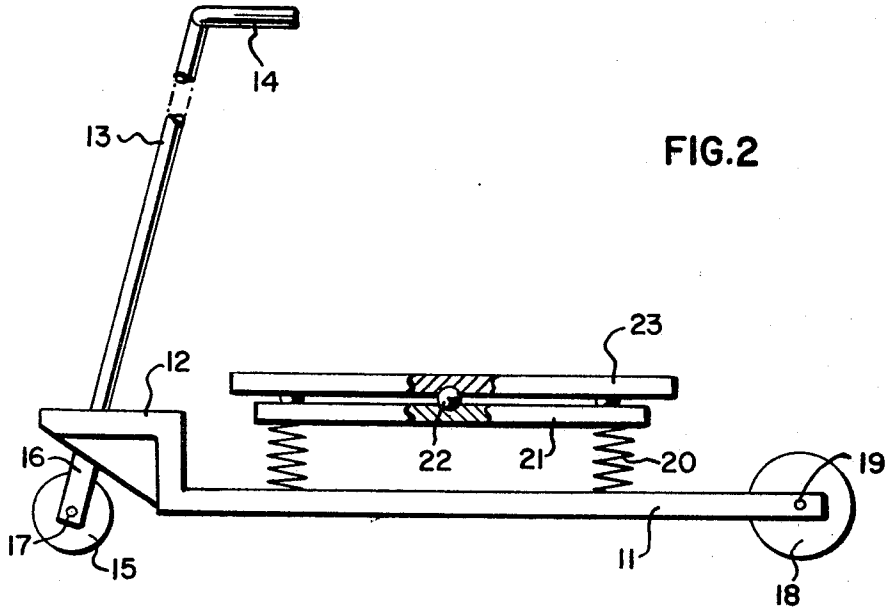



FIG.2





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# EXERCISING APPARATUS

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U.S. Cl. 280—21 6 Claims

## ABSTRACT OF THE DISCLOSURE

An exercising apparatus has a platform spacedly mounted above a base by means of at least one helical spring. If a single strong spring is used, it permits angular displacement of the platform on the base about the spring axis and axial oscillation of the platform. If several springs are employed, a turntable is interposed between the platform and the springs. Wheels or runner rails may be mounted on the underside of the base, and at least one wheel may be steered by means of an upright control rod pivotally mounted in the base and carrying the axle assembly of the steered wheel.

## SUMMARY OF THE INVENTION

This invention relates to an exercising apparatus for skiers which may also be employed as a toy.

Skiing requires precise control of body movements while the skis slide on a medium offering little frictional resistance. Minute changes in the distribution of body weight affect the direction of ski movement, and minor changes in the inclination of a skied slope or in the consistency of the snow covering the slope require the skier instantly to shift his body position if he wishes to maintain an upright position.

The object of the invention is the provision of an exercising apparatus which duplicates the many degrees of freedom of movement under which a skier performs his sport, and which therefore is suitable for practicing the compensatory body movements necessary for skiing.

## SUMMARY OF THE INVENTION

With this object and others in view, the invention, in one of its aspects, provides an exercising apparatus having a base member connected with a platform member in such a manner that the platform member is kept upwardly spaced from the base member in a direction transverse to a plane of support defined by the platform member, yet permitted to perform limited oscillations toward and away from the base member. The connection also has a hinge element which permits angular displacement of the platform member about a transverse axis relative to the base member during the oscillation of the platform member. The platform member supports a person during normal use of the apparatus.

A more advanced practitioner may attach runner rails to the underside of the base member and use the apparatus while sliding on snow or ice. He may also attach wheels to the base member and use the apparatus while the same rolls on a solid supporting surface.

Other features, additional objects, and many of the attendant advantages of this invention will readily be apparent from the following detailed description of preferred embodiments when taken in connection with the attached drawing.

## BRIEF DESCRIPTION OF THE DRAWING

In the drawing:

FIG. 1 shows a preferred embodiment of the invention in side elevation; and

FIG. 2 shows another exercising apparatus of the invention in a view corresponding to that of FIG. 1, and partly in section.



## DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawing in detail, and initially to FIG. 1, there is seen a rectangular base plate **1** mounted on two parallel, spaced runners **2** of which only one is seen in the drawing. Each runner **2** has the shape of an oversized ice skate and is attached to the underside of the base plate **1** by means of brackets **3**. The brackets are releasably fastened to the plate **1** by screws **4**.

A heavy helical compression spring **5** is centered on the base plate **1**, one axially terminal turn of the spring being fixedly fastened to the plate **1** in a conventional manner, not shown in detail. The axis of the spring **5** is vertical in the illustrated normal position of the apparatus, and the uppermost turn of the spring is fixedly fastened to the underside of a platform **6**. The spring **5** is so stiff that its consecutive turns do not touch each other when the upwardly directed supporting face **7** of the platform **6** carries the weight of an adult. The face **7** is oblong and dimensioned to carry both juxtaposed feet of the user.

The modified apparatus seen in FIG. 2 has a generally plate-shaped base member **11** whose front portion **12** is upwardly offset. A control bar **13** is mounted on the front portion **12** for pivoting movement about its longitudinal axis which is almost but not precisely vertical. The top end of the bar **13** is equipped with a handle bar **14** of a type conventional in children's scooters. The lower end of the bar **13** is attached to the axle assembly of a front wheel **15**. The assembly essentially consists of a fork **16** fixedly fastened to the bar **13** and a shaft **17** which horizontally connects the two branches of the fork and carries the wheel **15**. The rear end of the base member **11** is slotted, and a rear wheel **18** freely rotatable on a shaft **19** is partly received in the slot. The structure described so far is closely similar to an ordinary scooter.

The top face of the base member **11** carries four upright helical compression springs **20** in a rectangular pattern which permits only two of the springs to be seen in FIG. 2. The top ends of the springs **20** are attached to the lower race **21** of an axial ball bearing having four bearing balls **22** equianguarly spaced about the vertical bearing axis. The upper race of the bearing is provided by a platform **23** closely smililar in size, shape, and function to the platform **6**.

When the runners **2** and brackets **3** are released from the base plate **1** of the apparatus shown in FIG. 1, the base plate may be supported on the floor. A person standing on the platform **6** may perform vertical oscillating movements whose amplitude is limited by mutual abutment of the several turns of the spring **5** when the spring is compressed. It is also possible to twist the platform **6** about the spring axis, whereby the spring **5** is stressed and relaxed in torsion. These preliminary exercises provide a measure of body control useful in skiing, but not yet closely simulating actual skiing conditions.

A more advanced program of exercises is available when the runners **2** are attached to the base plate **1**, and the apparatus is propelled on an ice surface by one foot of the user pushing against the ice while the other foot is supported on the surface **7**. As soon as adequate speed is reached, the second foot may be raised to the platform **6**, and the afore-described twisting and oscillating exercises may be performed, preferably simultaneously. A person mastering all movements available with the apparatus of FIG. 1 is well conditioned for skiing.

Similar exercises can be performed on a smoothly paved surface with the scooter-like apparatus shown in FIG. 2. In an initial stage of exercises, the wheels **15**, **18** may be removed. The device of FIG. 2 then is op-

erated similarly to that shown in FIG. 1 without its runners **2** except for the absence of a resilient force resisting twisting motion. The platform **23** freely rotates on the bearing balls **22**.

When the apparatus of FIG. 2 is equipped with the wheels **15**, **18**, the user may initially rely on the handle bar **14** to steady himself and to control the direction of movement of the apparatus when it rolls on a smooth surface. A more advanced user can maintain any desired angular position of the platform **23** by angular movement of the same in all planes through the axis of the ball bearing **21**, **22**, **23**, relative to the base member **11** by body movements alone while the vehicle rolls, and can steer the front wheel **15** without touching the handle bar **14** or the control bar **13** by merely shifting his weight laterally of the direction of vehicle movement. Because of the slightly oblique position of the control bar in the longitudinal median plane of the apparatus, the wheel **15** tends to assume a position parallel to that of the wheel **18**.

While the apparatus of the invention was initially intended as an exercising device to be used by skiers or would-be skiers when snow is not available, it makes a toy for all but the smallest children. It offers much more of a challenge than a scooter or even a skate board, and helps in the development of good muscle coordination.

Numerous modifications and variations of the illustrated embodiments can obviously be resorted to. The spring arrangements of FIGS. 1 and 2 are interchangeable, and apparatus of the invention combining the wheeled base structure of FIG. 1 with a single helical spring as in FIG. 1 is specifically contemplated, as is the use of four helical springs and a turntable on a base plate equipped with runners. Ultimately, the single, heavy spring **5** may replace the four helical springs **20** in the apparatus of FIG. 2, and interposed between the base member **11** and the lower ball bearing race **21**. It is not possible to perform the most valuable exercises of this invention, when four helical springs as shown in FIG. 2 replace the single spring **5** in the device of FIG. 1 without the use of a turntable because the freedom of rotation about a vertical axis is important.

While only a single wheel **15** capable of tilting movement about a vertical axis has been shown in FIG. 2, two or four casters have been mounted on the base plate **1** to replace the runners **2** in the apparatus of FIG. 1 with satisfactory results. Other variations, permutations, and duplications of the several features illustrated in FIGS. 1 and 2 will readily suggest themselves to those skilled in the art.

What is claimed is:

**1.** An exercising apparatus comprising, in combination:

(a) a base member;

(b) a platform member defining a plane of support;

(c) connecting means connecting said members for keeping said platform member spaced from said base member in a direction transverse to said plane, said connecting means including:

(1) turntable means mounted on one of said members for permitting free rotation of said one member relative to the other member about an axis extending in said direction, and

(2) a plurality of spring means interposed between said other member and said turntable means and spaced about said axis to permit limited angular movement of said platform member in all planes through said axis.

**2.** An apparatus as set forth in claim **1**, further comprising two runners projecting from said base member in a direction away from said platform member, said runners being elongated in a common direction.

**3.** An apparatus as set forth in claim **1**, further comprising two wheels projecting from said base member in a direction away from said platform member for simultaneous engagement with a supporting surface.

**4.** An apparatus as set forth in claim **1**, further comprising two axles mounted on said base member and extending therefrom away from said platform member; and two wheels respectively mounted on said axles for rotation about respective axes transverse of said direction.

**5.** An apparatus as set forth in claim **4**, further comprising steering means for steering one of said wheels, said steering means including a control member journaled in said base member for rotation about an axis extending in said direction and projecting from said base member beyond said platform member, and motion transmitting means connecting said control member to the axle associated with said one wheel for tilting said axle.

**6.** An apparatus as set forth in claim **1**, wherein said spring means are interposed between said base member and said turntable means, said turntable means being mounted on said platform member for permitting the free rotation of the latter relative to the base member.


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