May 21, 1963 G. HJELTE ET AL 3,090,617

REPEATING EXERCISING DEVICE

Filed April 2, 1962 2 Sheets-Sheet 1

Fig. 1

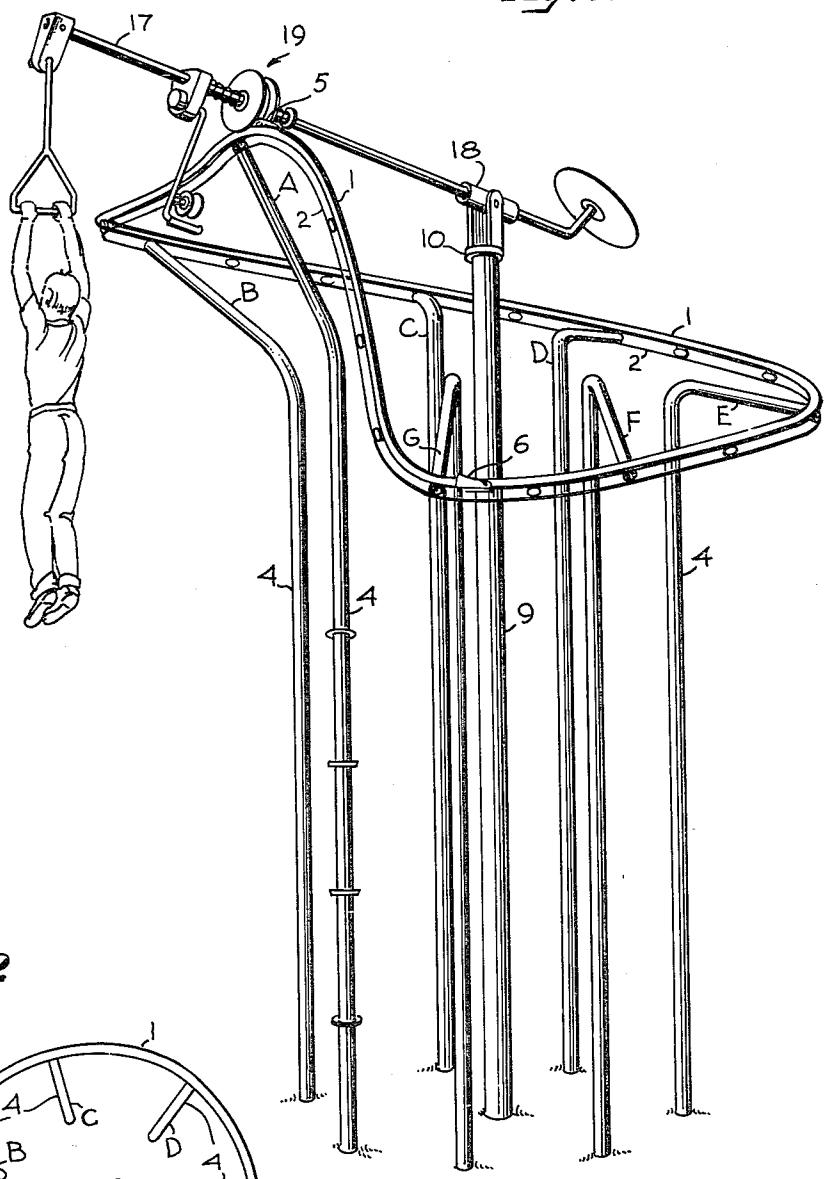
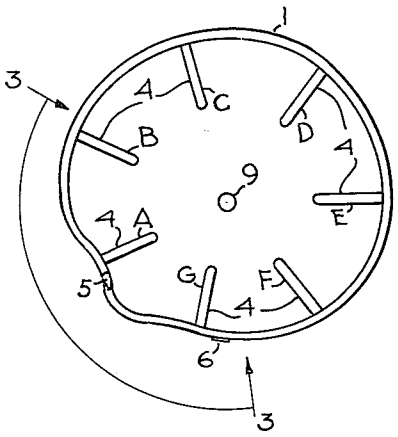


Fig. 2



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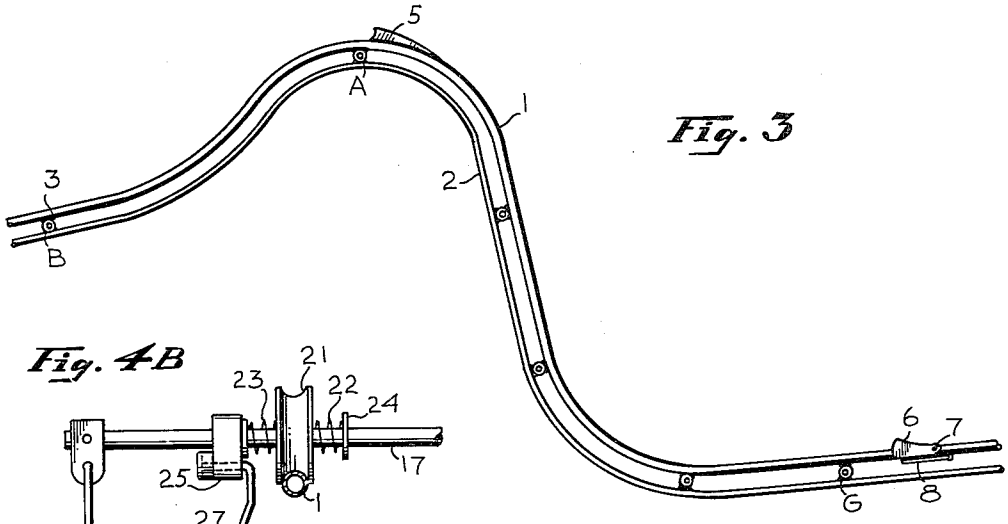


Fig. 3

Fig. 4B

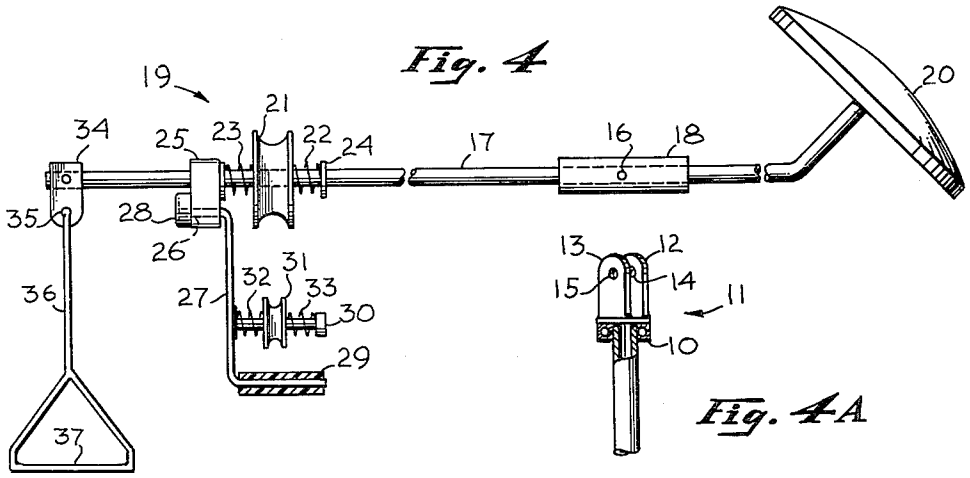


Fig. 4

Fig. 4A

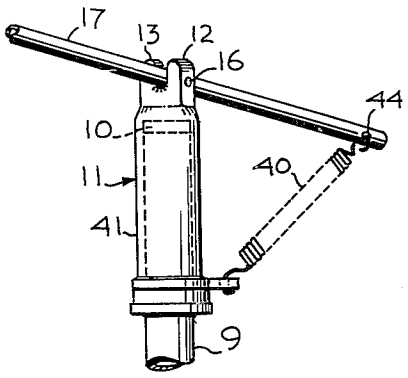


Fig. 5

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REPEATING EXERCISING DEVICE

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9 Claims. (Cl. 272—44)

This invention relates to a repeating exercising device and more particularly to a gravity actuated ride device having an automatic return to initial start position.

Many attempts have been made to provide a practical trolley-like device operated by gravity upon which a person can glide by the effects of gravity from a position of one elevation to another position of a lower elevation with relatively good safety and ease of return. Mechanisms of this nature have generally taken the form of cable cars which are provided with some crude form of braking mechanism to arrest the device at the end of the travel prior to collision with a support member. Eventually, such devices are abandoned due to the complex mechanism necessary to provide satisfactory arresting of the device, or due to the fact that a great amount of space is necessary to provide such a cable-supported vehicle with sufficient room to make a satisfactory ride available.

It is therefore an object of this invention to provide a gravity operated vehicle device capable of being positioned in a limited space while at the same time providing a satisfactory ride for a person.

It is another object of this invention to provide a gravity operated vehicle device capable of safe arresting action with complete reliability.

It is still another object of this invention to provide a gravity operated vehicle device capable of automatic return to the initial start point subsequent to the arresting action.

It is another object of this invention to provide a human ride device capable of controlled return to its initial start point at the will of the operator after being arrested from the previous trip.

It is another object of this invention to provide a human ride device provided with a trolley member that is balanced and properly secured to maintain the trolley member firmly in engagement with the supporting track.

Other objects, purposes, and characteristic features will become obvious as the description of the invention progresses.

In the drawings:

FIGURE 1 is a view showing the general configuration of one embodiment of this invention;

FIG. 2 is a top view showing the continuous path of the device;

FIG. 3 is an enlarged view of the start, stop, and return path of the track;

FIG. 4 is a view showing the details of the trolley member capable of travel on the track;

FIG. 4A is a view showing the details of the pivot support for the trolley member of FIG. 4;

FIG. 4B is another trolley member usable on a single member support track; and

FIG. 5 is a view of another pivot support member for the trolley member.

In each of the several views similar parts bear like reference characters.

In practicing this invention, there is provided, in one preferred embodiment, a generally circular closed path track having supported thereon a trolley device secured to a center pivot member and balanced for negative loads on the track during periods when the trolley device is not carrying a load. The negative balance of the trolley is overcome by the weight of a person supporting himself from the trolley device, with the trolley device being returned to the original starting position by the negative load condition upon removal of the person from the trolley device.

The ride device, as shown in FIG. 1, is provided with a main track 1 generally formed in a circular continuous path, and is provided with a guide track 2 secured thereunder by suitable support rings 3. The main track 1 is supported in its proper elevated position by support poles 4 secured to the main track 1 in a position to add to the support rings 3 used to space the guide track 2 from the main track 1. The main track 1 is provided with a fixed stop member 5 (see FIG. 2) positioned at the highest point on the main track 1 and a return spring-biased stop member 6 positioned at the lowest point on the main track 1. The spring-biased stop member 6 is pivoted about a pivot point 7 and biased by a flat spring member 8 to allow any trolley riding the main track 1 to pass by the return stop member 6 in its normal travel direction, but prevent the trolley member from returning to the highest point in the track 1 by reverse travel.

In addition to the plurality of support poles 4 utilized to support the main track 1 at a position above the ground, there is provided a center pole 9 positioned approximately equidistant from and central of the main track 1 and extended up to be at approximately the median height of the main track 1. The center pole 9 is provided with a pivoting support bearing 10 secured at the top thereof for rotation about a vertical axis. The support bearing 10 may take any suitable form, such as a ball bearing and plate, capable of allowing a support head 11 to rotate freely about a vertical axis.

The support head 11 is provided with a pair of vertically extending spaced-apart arms 12 and 13 provided with support bearing holes 14 and 15, respectively, positioned to receive a horizontal axis or pivot shaft 16 capable of supporting a trolley glide bar 17 for pivotal movement about the horizontal axis. The glide bar 17 is provided with a suitable sleeve reinforcing 18 for receiving the pivot member 16 therein. The glide bar 17 extends in a relatively horizontal attitude and in opposite directions from the pivot member 16, with the trolley mechanism 19 supported on one end thereof and a suitable balancing weight 20 on the opposite end thereof.

The trolley mechanism 19 comprises a suitable main pulley 21 capable of free rotation on the glide bar 17 and further capable of movement along the glide bar 17 against the effects of the bias springs 22 and 23 positioned between a pair of stop members 24 and 25, respectively, and the pulley 21.

The stop member 25 is an enlarged member provided with a suitable bearing hole 26 therein having its axis generally parallel to the glide bar 17. The hole 26 has positioned therein a guide arm 27 generally taking the form of a crank, with one end extending through the hole 26 and engaging a spiral bias spring 28 and the other end being positioned generally below the main pulley 21 and provided with a coated hand-hold 29 to aid in positioning the glide bar 17 in its proper tracking position. The guide arm 27 is provided with a projecting pivot support arm positioned between the hand-hold 29 and the main pulley 21. Positioned on the pivot arm 30 is a guide pulley 31 which has freedom of rotational and side movement on the pivot arm 30 except for the use of a pair of bias springs 32 and 33 utilized to maintain the guide pulley 31 in direct alignment with the main pulley 21 while allowing the guide pulley 31 to have side movement equal to that of the main pulley 21.

It should be obvious that the guide pulley 31 is biased by the spring 28 to engage the guide track 2 and thus maintain the main pulley 21 in firm engagement with the main track 1 at all times and thus position the trolley

mechanism or vehicle in engagement with the track 1. In addition, the pulleys 21 and 31 have biased control movement along the glide bar 17 and pivot arm 30, respectively, to allow for irregularities in the positions of the tracks 1 and 2 about the center pivot pole 9.

The glide bar 17 extends outwardly beyond the stop member 25 and is provided with a support plate 34 secured thereto having an opening 35 therein for receiving a support rod 36 having formed on the end thereof a handhold portion 37 to be utilized by a person wishing to ride the trolley device down along its main track 1.

It should be mentioned at this time that the support members 4 are provided with different angular position tops for supporting the main track and glide tracks 1 and 2 at the proper slope conditions to form the apogee to perigee track contour and return path.

The operation of the device will now be described to better explain its unique features. If we assume that the device is not being utilized, it can be seen that the balancing weight 20 will overcome the mass of the trolley portion 19 and cause the glide bar 17 to seek its topmost position in the main track 1. This would cause the pulley 21 to ride up and over the bar stop 5 and position itself at a point in front thereof and at the highest position in the track 1. If a person wishing to use the device then climbs one of the support members 4 and engages the hand support member 37, it can be seen that the trolley is now biased by the weight of the party riding thereon to seek the lowest point in the track 1 and thus roll along the slope of the track away from the stop member 5 down around the turn and past the return stop member 6, which is biased out of position by the pulley 21 and returned to its locking position by the flat spring 8. The trolley portion 19, after passing stop member 6, has sufficient momentum to cause the device to climb partially up the track 1 toward the stop bar 5 and then return by gravity back to the return stop member 6 and thus seek the lowest point in the track 1 and come to rest. If the individual riding the trolley then releases his hand hold on the bar 37, the balance weight 20 will cause the trolley mechanism 19 to ride up the return slope of the track 1 and over the cam surface of the stop bar 5 and come to rest in front of the stop bar 5 at the highest point on the track 1. At this time the trolley is again ready for another tour in the manner previously described.

In the device of FIG. 4B, only a single track 1 is used and the guide arm 27 is formed in the shape of a hook to prevent negative biasing of the glide bar 17 from causing complete displacement of the bar 17 from the track 1 during no load periods. Operation of this form of the device is substantially the same as that of the device of FIG. 4.

As an alternative, the weight 20 could be replaced by a biasing spring 40 for providing the return movement of the glide bar 17 to its starting position. FIG. 5 illustrates such a support in which the head 11 is provided with an etxended skirt capable of a position of close fit with the center pole 9. The lower edge of the skirt 41 is provided with a reinforcing ridge 42 having an eyelet 43 for receiving one end of the bias spring 40. The remaining end of the spring 40 is inserted into an opening 44 in the bar 17.

Although the support members 4 are shown as separate members, it is pointed out that these members could be arms extending from the central pole 9.

Since numerous changes may be made in the above-described construction without departing from the spirit and scope of the invention, it is intended that the invention not be limited beyond the scope of the following claims.

What is claimed is:

1. A repeating exercising device comprising:
a continuous closed track means having a downward slope from a starting position to an end position and an upward return slope from the end to the starting position;
a vehicle means positioned to engage said track means and travel by gravity when under load from said starting position to said end position; and
biasing return means for moving said vehicle means from said end position to said starting position upon load removal.

2. A repeating exercising device comprising:
a continuous closed track means having a downward slope from a starting position to an end position and an upward return slope from the end to the starting position;
a vehicle means positioned to engage said track means and travel by gravity when under load from said starting position to said end position;
biasing return means for moving said vehicle means from said end position to said starting position upon load removal; and
a central pivot member positioned within said continuous closed track means for pivotally securing said vehicle means to engage said track means.

3. A repeating exercising device comprising:
a continuous closed track means having a downward slope from a starting position to an end position and an upward return slope from the end to the starting position;
a vehicle means positioned to engage said track means and travel by gravity when under load from said starting position to said end position;
biasing return means for moving said vehicle means from said end position to said starting position upon load removal; and
a central pivot member positioned within said continuous closed track means for pivotally securing said vehicle means to engage said track means,
said biasing means being in the form of a weight secured to said vehicle means in a position with respect to said central pivot member for return movement of said vehicle means to said starting position.

4. A repeating exercising device comprising:
a continuous closed track means having a downward slope from a starting position to an end position and an upward return slope from the end to the starting position;
a vehicle means positioned to engage said track means and travel by gravity when under load from said starting position to said end position;
biasing return means for moving said vehicle means from said end position to said starting position upon load removal; and
a central pivot member positioned within said continuous closed track means for pivotally securing said vehicle means to engage said track means,
said biasing means being a bias spring secured between said vehicle means and said central pivot member for providing return movement of said vehicle means to said starting position upon load removal.

5. A repeating exercising device comprising:
a continuous closed track means having a downward slope from a starting position to an end position and an upward return slope from the end to the starting position;
a vehicle means positioned to engage said track means and travel by gravity when under load from said starting position to said end position;
biasing return means for moving said vehicle means from said end position to said starting position upon load removal; and
a central pivot member positioned within said continuous closed track means for pivotally securing said vehicle means to engage said track means,

said vehicle means having a pulley member engageable with said track means, said pulley member being supported on said vehicle means for limited movement in a direction toward and away from said central pivot member to take care of track means irregularities.

6. A repeating exercising device comprising:
a continuous closed track means having a downward slope from a starting position to an end position and an upward return slope from the end to the starting position;
a vehicle means positioned to engage said track means and travel by gravity when under load from said starting position to said end position;
biasing return means for moving said vehicle means from said end position to said starting position upon load removal;
a central pivot member positioned within said continuous closed track means for pivotally securing said vehicle means to engage said track means; and
maintaining means for preventing said vehicle means from being biased out of position from said track means.

7. A repeating exercising device comprising:
a continuous closed track means having a downward slope from a starting position to an end position and an upward return slope from the end to the starting position;
a vehicle means positioned to engage said track means and travel by gravity when under load from said starting position to said end position;
biasing return means for moving said vehicle means from said end position to said starting position upon load removal;
a central pivot member positioned within said continuous closed track means for pivotally securing said vehicle means to engage said track means; and
maintaining means for preventing said vehicle means from being biased out of position from said track means, said maintaining means being in the form of a biased pulley engageable with the underside of said track means to prevent vehicle means displacement from said track means.

8. A repeating exercising device comprising:
a continuous closed track means having a downward slope from a starting position to an end position and an upward return slope from the end to the starting position;
a vehicle means positioned to engage said track means and travel by gravity when under load from said starting position to said end position;
biasing return means for moving said vehicle means from said end position to said starting position upon load removal;
a central pivot member positioned within said continuous closed track means for pivotally securing said vehicle means to engage said track means; and
maintaining means for preventing said vehicle means from being biased out of position from said track means, said maintaining means being in the form of a hook engageable with the underside of said track means only during load removal periods.

9. A repeating exercising device comprising:
a continuous closed track means having a downward slope from a starting position to an end position and an upward return slope from the end to the starting position;
a vehicle means positioned to engage said track means and travel by gravity when under load from said starting position to said end position;
biasing return means for moving said vehicle means from said end position to said starting position upon load removal;
a central pivot member positioned within said continuous closed track means for pivotally securing said vehicle means to engage said track means; and
stop means positioned to engage said vehicle means at positions adjacent said starting and end positions of said track means for preventing improper travel direction of said vehicle means.

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