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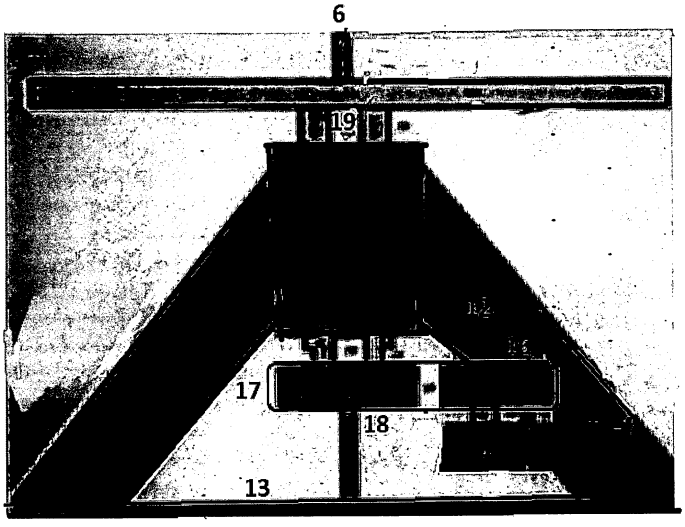
(54) SHORT ARM HUMAN CENTRIFUGE EQUIPPED WITH EXERCISE FOR MEDICAL USE AND PHYSICAL REHABILITATION

(57) The mainwheel consists of a Support Base (1) with the motion and rotation mechanisms including motor (14), reducer (15), drive gear (16) and spin gear (18), a shaft (19), two to four beds (2,3) connected to the central axis rotating on wheels (11), as well as exercise systems on the limbs with a bicycle (5), horizontal rowing (2) with), the handles and tires (9) are all connected to the electric control panel (dashboard) of the man-control with the inverter (7) and the electronic management system (control)(7B), and the power supply (6) with its protective (8).

Through the special construction, a support and rotation safety is provided. The beds rotate from 1-3 g with the person in a horizontal position with the head in the center and the legs outwards, simulating in this way the upright posture providing training of all parts of the body. The use of additional exercise during the rotation and especially the sliding system and the mechanical push /pull action of the rower (2) increases the load giving effective physical rehabilitation solution to both healthy people and patients. The bed with the bicycle at its end (5), has the ability to adjust this position (bicycle) to be adjusted with the height of the person and to increase the radius of rotation by graduating the G level on the legs accordingly. The advantage of this construction is that it does training all the systems of the person and not unilaterally, combining the rotation together with the exercise in a horizontal position providing excellent results.

Fig. 3



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Description

[0001] The centrifugal machine with the present invention has the characteristics that it consists of a solid base of three wings on which are fixed from one to four beds and rotate counterclockwise or clockwise, giving the possibility of modern exercise with adapted to them bicycle or rowing systems in an horizontal position.

[0002] According to this invention with the construction of a special shape and position of the gears of motion and rotation produced gravitational force equal to 1g (with rotation of the axis at specific revolutions per minute and specific radius), which is the force exerted on our body when we are standing and walking and is a complete exercise for the whole body. This is important for people who, due to injury or illness, are mobilized in bed, as well as for healthy people who do not have the ability to exercise physically.

[0003] By increasing the revolutions per minute we achieve greater gravitational force and consequently greater exercise effect throughout the body.

[0004] At the same time, we give the opportunity to perform additional exercise during the rotation with the use of a horizontal rowing system and a bicycle, mobilizing even more the musculoskeletal and cardiovascular systems of patients and healthy individuals with full restoration of their health.

[0005] Figure 1 (side view) shows schematic representation of the parts of the device, which consists of:

The support base (1) with the drive and rotation mechanisms including motor (14), reducer (15), drive gear (16) and spin gear (18), a shaft (19), two to four beds (2,3) rotating on wheels (11) connected to the central axis with a square iron plate connecting them (20) as well as exercise systems at the ends with a bicycle (5) and inverter (7), the electronic management system (controller) (7B), and the power supply (6) with its protective mechanism (8).

Figure 2 (floor plan) shows the floor plan of the man-fly with the same elements as in Figure 1 and in addition the square iron plate connecting the beds (20) to the central axis (19).

Figure 3 (side view) shows the base of the man-fly, which consists of a tripod with three support blades (12) firmly mounted on a square steel plate (13), which is screwed to the floor for constant rotation. The base of the motor (14) with the reducer (15) and the drive gear (16) are attached to one fin. The drive gear is connected by a toothed belt (17) to the pivot gear (18), which is located at the bottom of the pivot (19). Inside the shaft there is a fixed tube with a through hole for the power supply to the engine (6), as well as the central rotation ring with bearings and double support fuses.

Claims

1. The object of the invention is the physical rehabilitation of sick and healthy individuals by producing gravitational force with controlled acceleration along the axis "z" which is the axis that governs the body of man when upright with a degree of acceleration from 0 to 3 g (depending on the rotation of the axis at specific revolutions per minute and specific radius to the feet), where 1g is the force exerted on our body when standing. By increasing the revolutions per minute, we achieve greater gravitational force and consequently greater load effect that exercises the whole body while the body is in a reclining position. This construction gives the opportunity to people who are either healthy due to injury or patients due to diseases of the central nervous system and the musculoskeletal system who are immobilized in bed, to be able to exercise to avoid the irreparable damage of immobilization and immobility. Because the construction will be used for rehabilitation and for the musculoskeletal system it needs a greater load and the ability to exercise by bike and rowing. The technical characteristics defining the invention consist of a Support Base (1), which is **characterized by** a tripod with three support blades (12) firmly mounted on a square steel plate which is screwed to the floor for constant rotation (13) with the drive and rotation mechanisms including motor (14), reducer (15), drive gear (16) and spin gear (18), a shaft (19), through which a current is supplied to the motor (14) with the reducer (15) and the drive gear (16). In order to increase the rotation speed according to the g level, the motor (14) was connected to the reducer (15) in order to increase the speed according to the desired level of gravitational force. Also, to achieve the increase of gravitational force to 3 g, an inverter (7) was placed and to control the movement from far, an electronic management system (joystick) (7B) was constructed. In order to provide a counterweight to the bed two with the possibility of four beds (2,3) rotating on wheels (11) connected to the central axis with a square iron plate connecting them (20) as well as exercise systems on the limbs with a bicycle (5) to combine rotation with exercise in a horizontal position for greater physical strengthening and also includes horizontal position rowing (2), which is equipped even from sets of tires on both sides), safety fastening belts (10) and head support system (4) to avoid nausea. And all this is connected to the electric control panel (dashboard) of the Manafort with the inverter (7) and the electronic management system (controller)(7B), and the power supply (6) with its protective (8).

2. The base is **characterized by** a tubular shaft (19) passing through the center through a through hole and a central rotation ring with two bearings and dou-

ble support fuses for the safety of rotation.

3. The drive gear is connected by a toothed belt (17) to the pivot gear (18), which is located at the bottom of the pivot (19). The gears are arranged in such a way that there is a balance and the rotation of the beds does not go away.

4. The human flywheel is also **characterized by** a platform system (Plato) of horizontal movement on the one bed up for horizontal sliding on bearings by pushing the legs into a support at the end of the bed (11B), which we called horizontal position rowing (2).

5. The bicycle is **characterized by** the possibility of movement by varying the distance from the axis in order to be able to adjust with the height of the person, on the other hand to increase the radius of rotation and gradation of the g level on the legs. The advantage of this construction is that in a horizontal position the person rotating does not feel nauseous.

Fig.1 side view

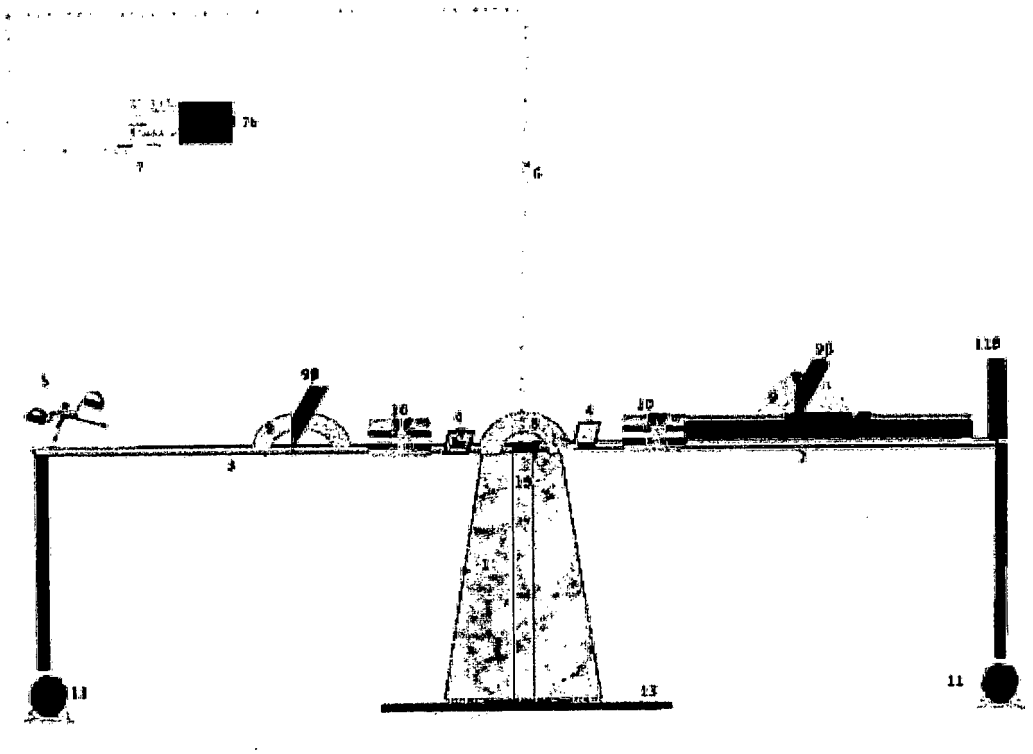


Fig.2 Top view

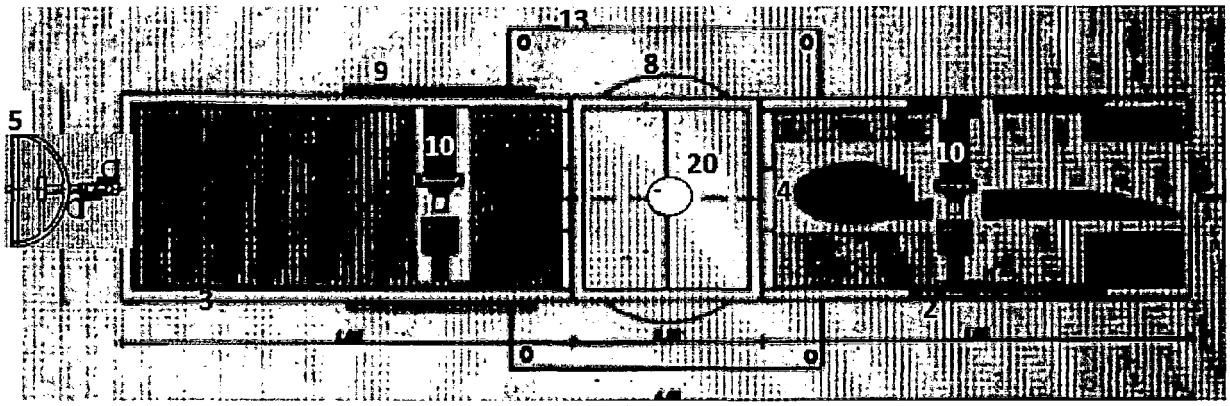
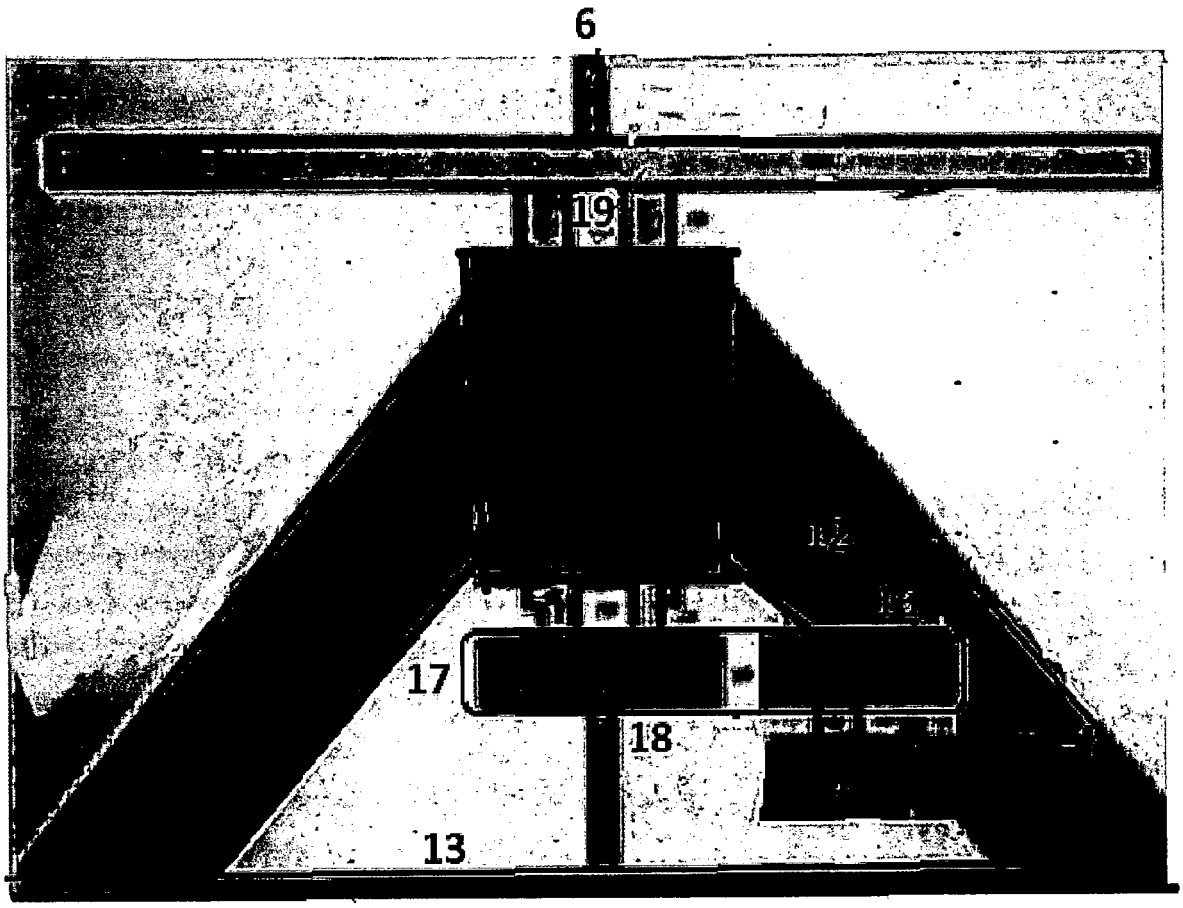


Fig. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 20 38 6044

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	8 February 2021	Shmonin, Vladimir

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 20 38 6044

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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