

Dec. 19, 1950

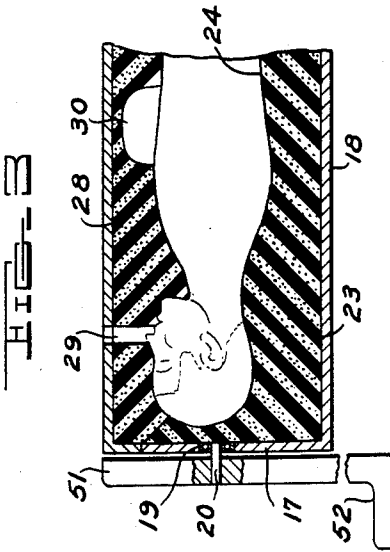
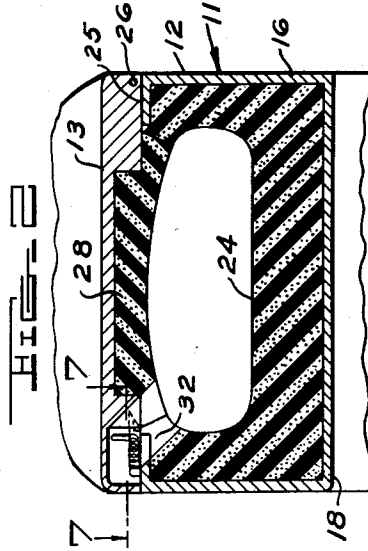
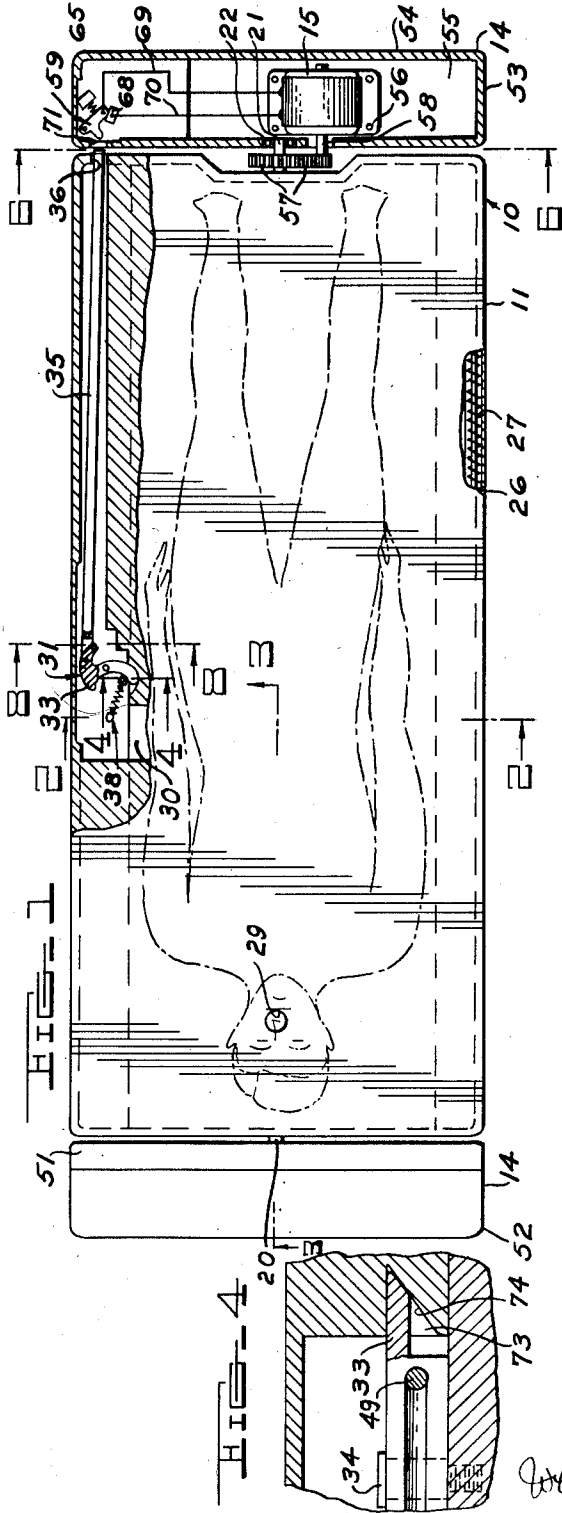
L. M. NORHEIM

2,534,471

REVOLVING BED

Filed Nov. 4, 1946

2 Sheets-Sheet 1



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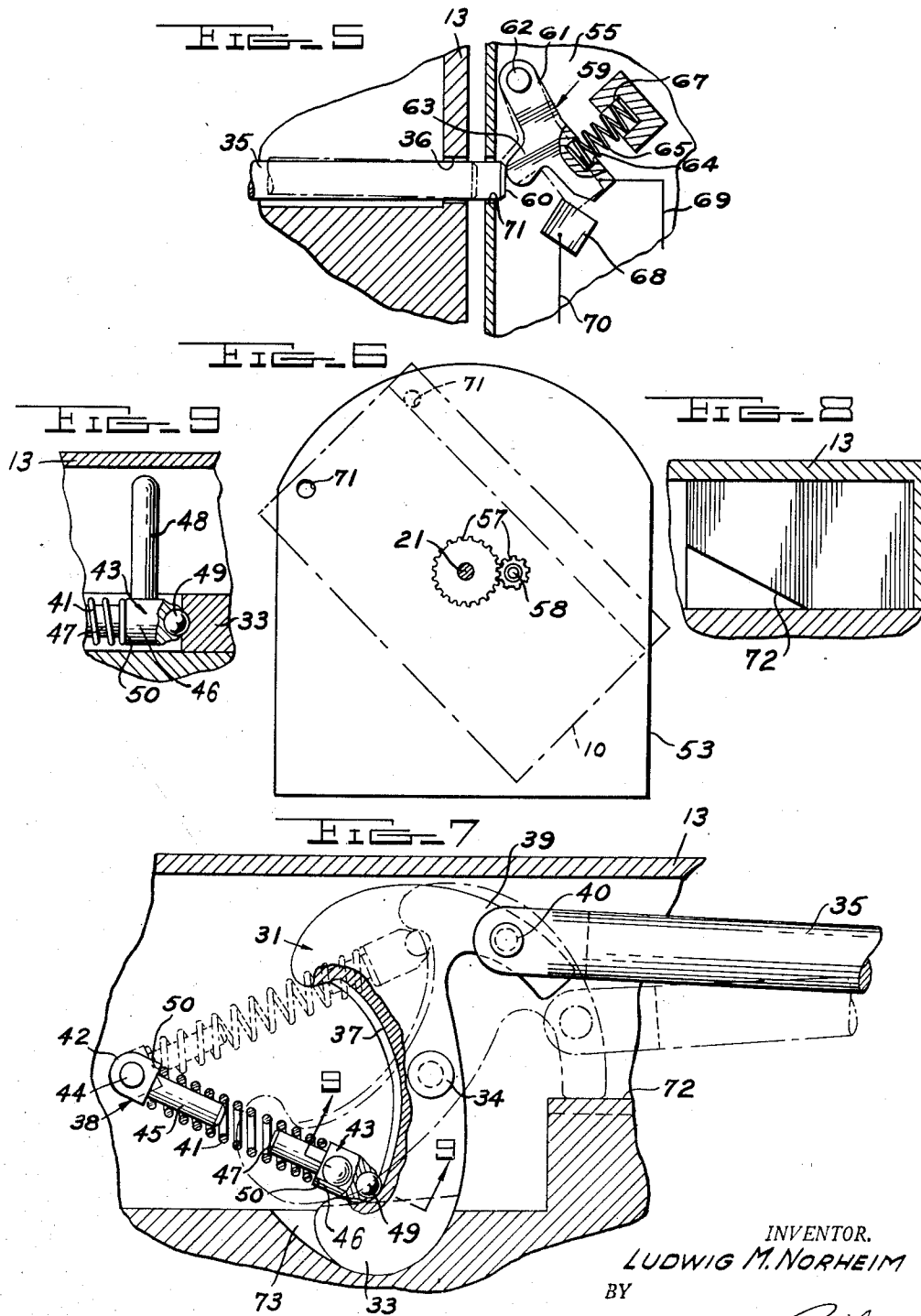
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# UNITED STATES PATENT OFFICE

2,534,471

## REVOLVING BED

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Application November 4, 1946, Serial No. 707,640

3 Claims. (Cl. 5—61)

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The invention relates to a sleeping device and more particularly to a bed wherein the position and weight of the sleeper relative thereto is continuously changed.

It has been found that while sleeping in conventional type beds the effectiveness of the sleep is greatly diminished and sometimes almost completely impaired due to poor and restricted blood circulation and incomplete relaxation of the nerves and muscles of the body. Primarily, this condition is due to the pressure from the weight of the body which is supported for a relatively long period of time on limited portions thereof. Adjacent these limited areas the muscles are frequently tense and veins supplying blood to the various parts of the body and remote limbs are often partially constricted and sometimes completely closed by such pressure. Frequently such constriction of the veins is so complete and for such a length of time as to cause numbness of the limbs and other parts of the body. Moreover, poor blood circulation often causes nightmares, sleep walking, or other afflictions, which consequently reduce the efficiency of sleep and sometimes even cause greater fatigue than was present when the sleep was commenced. To partially combat this condition, a sleeping person periodically moves and turns so as to contract and relax muscles, approximately 20 to 40 times in 8 hours, to improve and speed the blood circulation from the remote parts of the body. As can be appreciated, such movement requires considerable energy and greatly detracts from the rest and, therefore, replenishment of tissues and vitality. Moreover, complete circulation in the body augments and maintains a more uniform body temperature, especially in the remote limbs, to facilitate greater relaxation and combat ailments such as "colds" and other similar diseases.

It is therefore an essential object of this invention to provide a bed in which the pressure and weight of the sleeping person will successively be distributed to substantially all the main parts of the body, such as the back, sides and front, and in which all portions of the body will be periodically relieved of substantially all pressure to allow unrestricted blood circulation.

Another object of the present invention is to provide a bed whereby substantially complete mental and physical relaxation may be obtained and whereby the time required for recovery from fatigue is vastly decreased.

Still another object of the invention is to provide a bed wherein partial or temporary numb-

ness of limbs and afflictions, such as nightmares, due to a restriction or decrease in blood circulation is substantially prevented.

A feature of the present invention is to provide a rotating bed comprising a member for supporting a body and means for supporting and rotating the member wherein the position and weight of the body of the sleeping person relative to the member is continuously changed.

Still another feature of the invention is to provide a sleeping device comprising the combination of a member having a bottom and cover portion forming a cavity for a body and having a resilient lining in the cavity, and means for supporting and rotating the member.

Still another feature is to provide a single means for locking the portions of the member together, for latching the member to the supporting means in a predetermined position relative to the supporting means and for controlling the rotating means whereby upon closing the cover, the single means will automatically unlatch the member from the supporting means and operate the rotating means.

The foregoing, as well as other objects, will be more apparent as this description proceeds, especially when considered in connection with the accompanying drawings, wherein:

Figure 1 is a plan view of a rotating bed embodying the features of this invention with portions broken away for clarity;

Figure 2 is a sectional view taken substantially on the plane indicated by line 2—2 of Figure 1;

Figure 3 is a sectional view taken substantially on the plane indicated by line 3—3 of Figure 1;

Figure 4 is a fragmentary sectional view taken substantially on the plane indicated by line 4—4 of Figure 1;

Figure 5 is a view partly in section of a switch control;

Figure 6 is a sectional view taken substantially on the plane indicated by line 6—6 of Figure 1;

Figure 7 is a view partly in section taken substantially on the plane indicated by line 7—7 of Figure 2;

Figure 8 is a sectional view taken substantially on the plane indicated by line 8—8 of Figure 1; and

Figure 9 is a sectional view taken substantially on the plane indicated by line 9—9 of Figure 7.

Referring now more particularly to the drawings, it will be noted that the reference character 10 indicates a rotatable bed having a body supporting member 11 including a bottom portion 12 and a cover portion 13. The member 12 is

supported by a two-part base 14 for rotation by motor 15 mounted on one part of the base 14.

The bottom portion 12 of the member 11 is of substantially box shape having side walls 16, end walls 17 and a floor 18. A bearing 19 is provided in one of the end walls 17 of the member 11, such as a ball bearing, which revolves around the stationary shaft 20 carried by the base 14. The opposite end 17 of the bottom 12 is provided with a shaft 21 which rotates in a bearing, such as ball bearing 22, in the base 14.

A resilient lining 23 is provided in the bottom 12 having a cavity or mold 24 adapted to conform to the contour of a body or person. The lining 23, preferably of rubber, such as the sponge rubber variety, is retained in the bottom portion 12 of the member 11 by means of inwardly extending flanges 25 on the side walls 16.

The cover portion 13 of the member 11 is hinged along one side to the bottom portion 12 by means of rod 26 and is urged toward the open position by spring 27. A resilient lining 28 is also provided in the cover portion 13, having its adjacent surface supplementing the contour of the lining 23 in the bottom portion 12 which is retained in position by an adhesive or any other suitable means. A breather hole 29 is provided in the cover portion 13 adjacent the head portion of the mold 24. Clearance may also be provided, such as recess 30, for relatively free movement of the arms of the person when the cover is in the closed position.

A latch 31, accessible from within the member 11 through a passageway 32 in the bottom and cover portions 12 and 13, respectively, is provided for locking the member 11 in operative position. The latch 31 comprises an arm 33, pivotally mounted substantially equidistant from its ends on the flange 25 of bottom 12 by shoulder screws 34 and a rod 35 extending longitudinally above the flange 25 of the bottom portion 12 and, when the member is in closed position, within the slot 36 in the cover portion 13. The arm 33, having a substantially C-shaped contour, is provided on its inner edge with a race 37 for engaging keeper 38. An extending portion 39 is provided on one end of the arm 33 for coaction with the cover portion 13, to be described later, and has the rod 35 pivotally connected thereto by means of shoulder screw 40. The keeper 38 includes a spring 41, a guide member 42, and a bearing member 43. The guide member 42 is pivotally mounted on the flange 25 as by pin 44 and has a bolt portion 45 extending into one end of spring 41. The bearing member 43 comprises a body portion 46 having a bolt portion 47 extending into the adjacent end of the spring 41, an operating member or handle 48 secured to and extending upwardly from the body portion 46 and a ball 49 rotatably secured to the body portion 46 and bearing within the race 37 in arm 33. Shoulders 50 are provided on the guide member 42 and bearing member 43 to bear against adjacent ends of the spring 41 and retain tension thereon.

The two-part base 14 for supporting the member 11 comprises an end support 51, having a foot portion 52 and stationary shaft 20, and a housing support 53. The housing support 53 of the base 14 includes rectangular walls 54 and a partition 55 for mounting the motor 15, such as by screws 56. Reduction gears 57 are provided on the shaft 21, secured to the member 11, and to shaft 58 geared to the motor 15. A switch 59 for controlling the operation of the motor 15 is mounted on

a raised portion of the partition 55 adjacent the free end 60 of the extending rod 35 having an arm 61 pivoted at one end to the housing support 53 by shoulder screw 62. The arm 61 is provided with a projecting nob 63 adapted to engage the free end 60 of the rod 35 and, on its opposite side, with a recess 64 adapted to receive a spring 65. A retainer 66 having a recess 67 is suitably mounted on the housing support 53 to maintain tension on the spring 65 and urge the arm 61 against the contactor 68 suitably secured to the partition 55. Conductors 69 and 70 in the motor circuit connect the arm 61 and contactor 68 with the motor 15, respectively. An opening 71 is provided in the housing support 53 for receiving the rod 35, when the latter is in its extended position, and thereby locks the member 11 against rotation relative to the base 14.

As shown in Figure 8, the cover portion 13 is provided with a beveled edge 72 adjacent the extending portion 39 of arm 33 for coaction with the arm while moving into the closed position. A slot 73, best shown in Figure 4, is provided in the cover portion for receiving the adjacent end of the pivoted arm 33 to thereby lock the cover in the closed position. The slot 73 is provided with a sloping lower wall 74 for allowing vertical movement of the cover portion 13 as the arm 33 pivots horizontally into the slot 73.

In operation, after a person has positioned himself within the cavity 24, the cover 13 may be closed manually to automatically set the bed into operation, in which case the keeper 38 will assume the position shown in solid lines in Figure 7. To accomplish this, the beveled face 72 on the cover engages the extending portion 39 to pivot the arm 33 into the slot 73, thus locking the cover to the bottom portion 12. At the same time, pivoting of the arm 33 moves the rod 35 out of the opening 71, to release the member 11 from the base 14, and also moves away from the projecting nob 63 on the switch arm 61 to start the motor. Operation of the motor 15 is accomplished by the spring 65 pivoting the arm 61 into electrical engagement with the contactor 68 to thus complete the circuit through the conductor leads. As is apparent, to stop the bed from rotating and to open the cover, the keeper 38 is moved to the position illustrated in Figure 7 by broken lines, thus pivoting the arm 33 out of the slot in the cover portion 13 and moving the rod 35 into engagement with the base 14 and switch 59.

It is obvious that several modifications of the apparatus for carrying out the invention may be employed. For example, the bed or supporting member for the body may merely be a bottom portion, or conventional bed, with straps or other means for retaining and supporting the person while in the inverted position. Moreover, any means of support for the bed may be utilized, such as an overhead support, and any means of rotation may be used, such as manual or engine power.

It may be desired to provide means for reading in bed, in which case the breathing opening may be enlarged to provide an outside view and openings may be provided through the cover for extending the arms.

It has been found particularly advantageous to rotate the bed at a constant relatively slow rate, such as one revolution during each five or ten minute period. However, this rate may be increased or decreased depending on the condition and effects desired by the particular occupant.

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Moreover, periodic rotation may be desired wherein the bed would turn a partial or complete revolution at a desired rate for one interval of time and then remain in one position for another interval of time.

It can be seen from the above description of the invention that the device provides a bed in which the position and weight of an occupant is continuously, or periodically, changed to thereby prevent constriction of the veins supplying blood to various parts of the body. The device therefore will substantially prevent nightmares and decrease nervous and muscular energy ordinarily required to facilitate and increase blood circulation which is ordinarily lost in conventional beds. In addition, the revolving bed of the present invention is particularly advantageous in cases where a maximum relaxation and conservation of energy is necessary, such as when combating disease. Moreover, due to the more perfect blood circulation acquired during sleep in the present device, and therefore the more complete distribution of food, replenishment of tissues may be substantially increased, health maintained, energy conserved and, therefore increase in life for the average user.

What I claim as my invention is:

1. A revolving bed comprising spaced end supports, a member extending between the supports and having the opposite ends respectively pivotally mounted on the supports for continuous rotation, a cover for the member movable to open and closed positions and cooperating with the member to support a body in a reclining position during rotation of the member, power means for continuously rotating the member, control means for starting and stopping the power means, a movable part for operating the control means accessible for manipulation by the user while in a reclining position between the member and cover, and means between the control means and the part for holding the latter against movement in a direction to operate the control means to stop the power means and operable to release the part as said member assumes an upright position.

2. A revolving bed comprising spaced end supports, a member extending between the supports and having the opposite ends respectively pivotally mounted on the supports for continuous rotation, a cover for the member movable

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to open and closed positions and cooperating with the member to support a body in a reclining position during rotation of the member, a latch mechanism for holding the cover in the closed position with respect to the member and releasable by the user while in a reclining position between the member and cover, power means for continuously rotating the member, control means for starting and stopping the power means, and means responsive to manipulation of the latch mechanism for operating the control means.

3. A revolving bed comprising spaced end supports, a member extending between the supports and having the opposite ends respectively pivotally mounted on the supports for continuous rotation, a cover for the member movable to open and closed positions and cooperating with the member to support a body in a reclining position during rotation of the member, a latch mechanism for holding the cover in the closed position with respect to the member and releasable by the user while in a reclining position between the member and cover, power means for continuously rotating the member, control means for starting and stopping the power means, means for operating the control means including a part movable in one direction to stop the power means and movable in another direction to start said power means, a connection between the latch mechanism and part for respectively moving the part in said first and second named directions as said latch mechanism is released and engaged.

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