is a mode which is used when the user's respiration has become unsteady during sleep.

[0133]

Making the inclination angle of the back section larger than 0° causes the user's diaphragm to move down and thus facilitates maintaining the user's airway for easier breathing. Therefore, in the third mode, when the user's respiration has become unsteady (for example, in a case where the user gets hyperventilation), the bed system performs the "raising" operation, checks the state of hyperventilation after the elapse of a given period of time, and determines whether to further perform the "raising" operation.

[0134]

[S3001]

The first user interface 4 determines ON or OFF of the third mode. When determining that the third mode is OFF (NO in step S3001), the first user interface 4 ends the operation.

[0135]

When determining that the third mode is ON (YES in step S3001), the first user interface 4 transmits that effect as a signal A to the body motion detector 2.

[0136]

[S3002] and [S3003]

Upon receiving the signal A concerning the "third mode", the body motion detection controller 22 detects the

respiratory rate of the user with the detector 21, and determines whether the respiratory rate satisfies a first value (for example, α3 times per minute). When determining that the respiratory rate is less than the first value (NO in step S3003), the body motion detection controller 22 repeats step S3003.

Without being limited to this case, for example, upon receiving the signal A concerning the “third mode”, the body motion detection controller 22 can detect a variation in the respiratory rate of the user with the detector 21. Specifically, when the variation exceeds a given threshold value, the body motion detection controller 22 can advance the operation to step S3004, and, when the variation does not exceed the given threshold value, the body motion detection controller 22 can repeat step S3003.

[0137]

[S3004]

When determining that the respiratory rate is greater than or equal to the first value (YES in step S3003), the body motion detection controller 22 transmits a signal C for performing the “raising” operation at a sixth speed. Furthermore, the sixth speed is able to be changed as appropriate each time step S3004 is repeated.

[0138]

Upon receiving the signal C, the first controller 101

Claims

[Claim 1]

A bed apparatus comprising:

a supporting unit that supports a user; and

a control unit that controls an operation of the supporting unit,

wherein a speed of the operation of the supporting unit in a case where the user manipulates the supporting unit is higher than a speed at which the control unit automatically causes the supporting unit to operate,

wherein the supporting unit is automatically operated at different speeds during a single operation of the supporting unit controlled by the control unit.

[Claim 2]

The bed apparatus according to claim 1, wherein, when causing the supporting unit to perform a first operation, the control unit causes the supporting unit to operate at a first speed, operate at a second speed lower than the first speed after a first time has elapsed operating at the first speed, and operate at a third speed higher than the second speed after a second time has elapsed operating at the second speed and if the supporting unit has not reached a position to end the first operation.

[Claim 3]

The bed apparatus according to claim 2, wherein, when causing the supporting unit to perform the first operation, in a case of determining that the user has fallen asleep, the control unit causes the supporting unit to operate at the first speed.

[Claim 4]

The bed apparatus according to claim 1, wherein, when causing the supporting unit to perform a second operation, if detecting body motion, a heartbeat rate, or a respiratory rate of the user in a vicinity of time at which the user intends to sit up, the control unit causes the supporting unit to operate.

[Claim 5]

The bed apparatus according to claim 4, wherein, when causing the supporting unit to perform the second operation, in a case of determining that the user has fallen asleep again, if detecting body motion, a heartbeat rate, or a respiratory rate of the user in a vicinity of time at which the user intends to sit up, the control unit causes the supporting unit to operate.

[Claim 6]

The bed apparatus according to claim 1, wherein, when causing the supporting unit to perform a third operation, in a case where respiration of the user has become unsteady, the

control unit causes the supporting unit to operate.

[Claim 7]

The bed apparatus according to claim 6, wherein, when causing the supporting unit to perform the third operation, the control unit checks a state of respiratory rate of the user after a given period of time elapses, and determines whether to cause the supporting unit to operate.

[Claim 8]

The bed apparatus according to claim 1, wherein, when the control unit causes the supporting unit to perform a fourth operation, an operation speed of the supporting unit in a case where the user is lying on the supporting unit is lower than an operation speed of the supporting unit in a case where the user is not lying on the supporting unit.

[Claim 9]

The bed apparatus according to claim 1, wherein, when the control unit causes the supporting unit to perform a fifth operation, an operation speed of the supporting unit in a case where a sufficient amount of time has not passed after the user eats is lower than an operation speed of the supporting unit in a case where the sufficient amount of time has passed after the user eats.

[Claim 10]

The bed apparatus according to claim 9, wherein, when causing the supporting unit to perform the fifth operation,

in a case where the sufficient amount of time has not passed after the user eats, the control unit causes the supporting unit to operate, then causes the supporting unit to temporarily stop, determines any abnormality in heartbeat or respiration of the user, and, if there is no abnormality in heartbeat or respiration, causes the supporting unit to operate.

[Claim 11]

The bed apparatus according to claim 1, wherein, when the control unit causes the supporting unit to perform a sixth operation, an operation speed of the supporting unit in a case where a posture of the user on the supporting unit is a first posture is higher than an operation speed of the supporting unit in a case where the posture of the user on the supporting unit is a second posture.

[Claim 12]

The bed apparatus according to claim 1, wherein, when the control unit causes the supporting unit to perform a seventh operation, an operation speed of the supporting unit in a case where an amount of change in heartbeat rate of the user exceeds a predetermined value is lower than an operation speed of the supporting unit in a case where the amount of change in heartbeat rate of the user does not exceed the predetermined value.

[Claim 13]

The bed apparatus according to claim 1, wherein, when

the control unit causes the supporting unit to perform an eighth operation, an operation speed of the supporting unit in a case where a sleeping posture of the user is lying face-down is lower than an operation speed of the supporting unit in a case where the sleeping posture of the user is not lying face-down.

[Claim 14]

The bed apparatus according to claim 1, wherein, when causing the supporting unit to perform a ninth operation, the control unit sets the supporting unit to a first angle in a case where a sleeping posture of the user is lying face-down, sets the supporting unit to a second angle larger than the first angle in a case where the sleeping posture of the user is lying sideways, and sets the supporting unit to a third angle larger than the second angle in a case where the sleeping posture of the user is lying face-up.

[Claim 15]

The bed apparatus according to claim 1, wherein, when the control unit causes the supporting unit to perform a tenth operation, an operation speed of the supporting unit in a case where a value of a current flowing through an actuator which causes the supporting unit to operate exceeds a predetermined value is lower than an operation speed of the supporting unit in a case where the value of a current flowing through the actuator does not exceed the predetermined value.

[Claim 16]

The bed apparatus according to claim 3, further comprising a user interface used for the user to issue an instruction for operation to the control unit,

wherein, in a case where an icon concerning falling asleep is selected by the user, the user interface causes the control unit to perform the first operation.

[Claim 17]

The bed apparatus according to claim 4, further comprising a user interface used for the user to issue an instruction for operation to the control unit,

wherein, in a case where an icon concerning automatic driving is selected by the user, the user interface causes the control unit to perform the second operation.

[Claim 18]

The bed apparatus according to claim 6, further comprising a user interface used for the user to issue an instruction for operation to the control unit,

wherein, in a case where an icon concerning respiration is selected by the user, the user interface causes the control unit to perform the third operation.

[Claim 19]

The bed apparatus according to claim 8, further comprising a user interface used for the user to issue an instruction for operation to the control unit,

wherein, in a case where an icon concerning a raising operation or a lowering operation is selected by the user, the user interface causes the control unit to perform the fourth operation.

[Claim 20]

The bed apparatus according to claim 9, further comprising a user interface used for the user to issue an instruction for operation to the control unit,

wherein, in a case where an icon concerning eating is selected by the user, the user interface causes the control unit to perform the fifth operation.