



A REMOTELY DEACTIVATED ALARM CLOCK SYSTEM



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FIELD OF THE INVENTION

The present invention relates generally to the field of alarm clocks systems, and more particularly to a remotely deactivated alarm clock system.

BACKGROUND OF THE INVENTION

For most people, the beginning of a work day is announced by an alarm clock. Once awoken, the user usually needs to commence post-wakefulness activities, such as the cleansing of the teeth. However, the transition from sleep to wakefulness is difficult for many people, and numerous practices and units have been implemented with the intention of facilitating this transition. Some people use alarm clocks with unpleasant or extraordinarily loud audible signals, to jar the sleeper awake. Others place their alarm clocks at a distance from their beds, so that physical activity is required to deactivate the alarm.

Examples of prior art alarm clocks with some kind of remote controller include that taught in U.S. Pat. No. 4,316,273 by Jetter, which proposes a local alarm signal unit, placed in close proximity to the sleeper, with a remote unit containing means for deactivating the alarm. The remote placement of the deactivating unit forces the sleeper to get out of bed and move to the location of the deactivating unit in order to stop the alarm signal. In this teaching the awakened person is further required to hold the deactivation switch for several seconds, for the purpose of insuring the operator has thoroughly awakened, and thus preventing oversleeping. Once the deactivation requirements have been met, the disabling of the alarm signal is permanent. The teaching of Jetter further requires that the sleeper either get up immediately and satisfy the requirements for deactivating the alarm system, or otherwise endure the alarm signal. Thus, the teaching of Jetter uses separation of the alarm deactivating means from the alarm signal means in order to abruptly force

wakefulness upon the user. However, it does not get the user to commence any post-wakefulness activity.

Another example of a prior art alarm clock unit utilizing a remote control unit to deactivate an alarm signal is described in U.S. Pat. No. 5,379,273 issued to Kevin Horinek. In this implementation, provisions are made in the alarm clock for a snooze button which is activated by a hand held remote control unit. A limitation is placed on the number of times the user may utilize the remote control unit, so that a gradual, though finite, period is provided to bring the operator to wakefulness. Though such a configuration achieves the purposes for which it was made, it does not get the user to commence any post-wakefulness activity.

Yet another prior art unit in which an alarm clock system is separated into two elements is disclosed by Rothman in U.S. Pat. No. 4,218,875. In this invention, the alarm signal portion of the alarm clock is demountably attached to a clock and is adapted to be removed from the clock and thrown against a surface without harm to the alarm signal unit. In this teaching, the alarm signal is deactivated following impact of the alarm signal unit with a surface. Thus a cathartic unit is provided for a sleeper who is annoyed by the alarm signal, and also provides a novel means for deactivating the alarm. However, the invention proposed by this teaching does get the user to commence any post-wakefulness activity.

While any of the aforementioned prior art units may be said to bring the sleeping person to full wakefulness within a certain interval of time, it will be appreciated that they do not get the user to commence any post-wakefulness activity.

SUMMARY

According to the invention, there is provided a remotely deactivated alarm clock system comprising a controller unit and a remotely located oral hygiene unit. The controller unit functions for displaying time, scheduling alarms and generating alarms to awaken a user. The remotely located oral hygiene unit is capable of establishing a wireless communication link with the controller unit. In use, the controller unit generates an audible alarm according to a schedule determined by the user. When the alarm sounds, the remote

placement of the oral hygiene unit forces the sleeping user to rise out of bed, walk to the oral hygiene unit and commence oral hygiene activity in order to stop the alarm. Operation of the oral hygiene unit establishes a wireless communication link with the controller unit, and generates a usage signal which is communicated from the oral hygiene unit to the controller unit. The controller unit upon receipt of the usage signal terminates the audible alarm. The present invention thus brings a sleeping user to full wakefulness and requires the user to commence oral hygiene activity in order to terminate the alarm. The controller unit comprises a control unit, a wireless communication means coupled to the control unit, a sound generation means coupled to the control unit, a display means coupled to the control unit, and an input means coupled to the control unit. The controller unit is operative to display the current time and to audibly reproduce an audible alarm when the current time corresponds to a preselected alarm time. The wireless communication means functions for establishing a communication link with the oral hygiene unit. In one embodiment of the invention, the oral hygiene unit is an electric toothbrush unit.

The object of the invention is to provide something new.

The invention has the advantage of requiring the user to commence oral hygiene activity in order to terminate the alarm.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention may be embodied in the form illustrated in the accompanying drawings, attention being called to the fact, however, that the drawings are illustrative only, and that changes may be made in the specific construction illustrated and described within the scope of the appended claims. Those skilled in the art will readily ascertain, however, that the invention is capable of other embodiments and of being practiced and carried out in various ways. In this respect, the details of construction disclosed herein, and the arrangements of the components set forth in the following description and appended drawings are for illustrative purposes, only, and are not intended to be limiting in scope.

The various aspects which characterize the invention will be better understood and appreciated when consideration is given to the following detailed description, and to the accompanying drawings, in which:

FIG.1 is a block diagram of the remotely deactivated alarm clock system according to the present invention;

FIG. 2 is a block diagram of one embodiment of the remotely deactivated alarm clock system according to the present invention;

FIG. 3 is a block diagram of the elements of one embodiment of the electric toothbrush unit of the invention;

FIG. 4 is a block diagram of elements of another embodiment of the electric toothbrush unit of the invention;

FIG. 5 is a block diagram of the elements of another embodiment of the electric toothbrush unit of the invention;

FIG. 6 is a diagram of a remotely deactivated alarm clock system in accordance with one embodiment of the present invention;

FIG. 7 is a block diagram of an embodiment of the electric toothbrush unit of the invention;

FIG. 8 is a block diagram of one embodiment of the controller unit of the invention;

FIG. 9 is a block diagram of another embodiment of the controller unit of the invention;

FIG. 10 is a block diagram of another embodiment of the controller unit of the invention;
and

FIG. 11 is a block diagram of yet another embodiment of the controller unit of the invention.

DETAILED DESCRIPTION OF THE VARIOUS EMBODIMENTS

The inventors have given a non-limiting description of several embodiments of the present invention, to which many changes may be made without deviating from the spirit of the invention. While this invention has been described with reference to illustrative embodiments, this description is not intended to be construed in a limiting sense. Various modifications and combinations of the various embodiments as well as other embodiments of this invention will be apparent of a person skilled in the art upon reference to this description.

Furthermore, other changes such as those which are aesthetic, or those which include the substitution of other materials as they become available which perform substantially the same function in substantially the same manner with substantially the same result without deviating from the spirit of this invention may be made. It is therefore contemplated that the appended claims cover any such modifications and/or embodiments that fall within the true scope of the present invention.

The various features of novelty which characterize the system of the present invention are pointed out with particularity in the claims appended hereto and forming a part of this disclosure.

For most people, the beginning of a work day is announced by an alarm clock. Once awoken, the user usually needs to commence the user's post-wakefulness activities. A common post-wakefulness activity is oral hygiene, such as the cleansing of the teeth.

The present invention relates generally to the field of alarm clocks, and more particularly to a remotely deactivated alarm clock system comprising a controller unit 20 and a oral hygiene unit 30, in which an activated alarm is rendered inoperative in response to the

operation of the remotely located oral hygiene unit 30. As illustrated in FIG.1, the remotely deactivated alarm clock system comprises a controller unit 20 and a oral hygiene unit 30. The controller unit 20 functions for displaying time, scheduling alarms and generating alarms to awaken a user. The remotely located oral hygiene unit 30 is capable of establishing a wireless communication link with the controller unit 20. In use, the controller unit 20 generates an audible alarm according to a schedule determined by the user. When the alarm sounds, the remote placement of the oral hygiene unit 30 forces the sleeping user to rise out of bed, walk to the oral hygiene unit 30 and commence oral hygiene activity in order to stop the alarm. When the user uses the oral hygiene unit 30, the oral hygiene unit 30 establishes a wireless communication link with the controller unit 20, and generates a usage signal which is communicated from the oral hygiene unit 30 to the controller unit 20. The controller unit 20 upon receipt of the usage signal terminates the audible alarm.

As illustrated in FIG. 2, in one embodiment of the invention, the oral hygiene unit 30 is an electric toothbrush unit 32. Referring to FIG. 3, in one embodiment of the electric toothbrush unit 32, the electric toothbrush unit 32 comprises a on/off switch 40, a wireless communication means 42 coupled to the on/off switch 40, and a motion translating means 44 coupled to the on/off switch 40. The motion translating means 44 enables the brushing function of the electric toothbrush unit 32. In use, the switching on of the on/off switch 40 activates the motion translating means 44, and activates the wireless communication means 42 to establish a communication link with the controller unit 20 and to transmit a usage signal to the controller unit 20, and the controller unit 20 upon receipt of the usage signal terminates the alarm. Referring to FIG. 4, in another embodiment of the electric toothbrush unit 32, the wireless communication means 42 is a transmitter 46. Referring to FIG. 5, in yet another embodiment of the electric toothbrush unit 32, the wireless communication means 42 is a transceiver 48.

Referring to FIG. 6, in another embodiment of the invention, the remotely deactivated alarm clock system comprises a controller unit 20 and an electric toothbrush unit 32 comprising a main member 50 and a functional member 52. Referring to FIG. 7, the main member 50 comprises a housing 54, a micro-switch 56 contained within the housing 54, a

transmitter 46 coupled to the micro-switch 56, and a power induction means 58. The power induction means 58 is contained within the housing 54. The functional member 52 is in removable contact with the main member 50. The functional member 52 and is operable for brushing teeth. The functional member 52 comprises a on/off switch 40, a rechargeable power supply unit 60 coupled to the on/off switch 40, and a motion translating means 44 coupled to the on/off switch 40. In use, the functional member 52 while in contact with the micro-switch 56 deactivates the transmitter 46. The rechargeable power supply unit 60 of the functional member 52 is charged by the power induction means 58 of the main member 50. The separation of the functional member 52 from the micro-switch 56 for usage activates the transmitter 46. Upon activation, the transmitter 46 establishes a communication link with the controller unit 20 and transmits a usage signal to the controller unit 20, and the controller unit 20 upon receipt of the usage signal terminates the alarm. In one embodiment, the rechargeable power supply unit 60 is a rechargeable battery.

FIG. 8 shows a block diagram of one embodiment of the controller unit 20. As can be seen from this figure, the controller unit 20 comprises a control unit 140, a wireless communication means 142 coupled to the control unit 140, a sound generation means 144 coupled to the control unit 140, a display means 146 coupled to the control unit 140, and an input means 148 coupled to the control unit 140. The controller unit 20 is operative to display the current time and to audibly reproduce an audible alarm when the current time corresponds to a preselected alarm time. The wireless communication means 142 functions for establishing a communication link with the oral hygiene unit 30. As illustrated in FIG. 9, in another embodiment of the controller unit 20, the wireless communication means 142 is a receiver 150. In another embodiment of the controller unit 20, the wireless communication means 142 is a receiver 150 which is able to identify the oral hygiene unit 30 by the transmitting frequency. In yet another embodiment of the controller unit 20, the wireless communication means 142 is a receiver 150 which is able to identify the oral hygiene unit 30 by its unit code. In yet another embodiment of the controller unit 20, the wireless communication means 142 is a transceiver.

As illustrated in FIG. 10, in accordance with another embodiment of the controller unit 20, the controller unit 20 further comprises a snooze means 154 coupled to the control unit

140. The snooze means 154 function to suspend or delay operation of the alarm for a predetermined interval.

The control unit 140 comprises a microcontroller with input and output interface, and a memory coupled to the microcontroller. The manner in which controller unit 20 operates to perform such conventional functions as time, date and alarm display, as well as the setting of the same, are not deemed to be novel aspects of the invention and are further to be believed by the inventors herein to be well within the level of skill of those familiar with the art. For this reason, and in the interest of clarity of disclosure, a detail description of the same has been omitted. It thus suffices to say the controller unit 20 of the present invention contains a control unit 140 which may be readily configured by the user to set and store the current time and/or date, and to set and store a preferred waking or alarm time.

Suitable examples for the sound generation means 144 of the controller unit 20 comprise speakers and buzzers. In one embodiment of the invention, the sound generation means 144 generates an alarm where the volume of the alarm softens after the initial wake-up call. A suitable example for the display means 146 is a liquid crystal display. Another suitable example for the display means 146 is a light emitting diode display.

Those skilled in the art will be aware of a variety of input means 148 which are well known and used to select and adjust alarm system parameters, including key means, push-buttons and rotatable dials or wheels, said means including appropriate conditioning circuitry for suitable interfacing to the other alarm clock system electronics. For example, the controller unit 20 may have a button for time and date setting selection, a push button for time and date adjustment, a push button for alarm setting, a push button for alarm adjustment, a push button for alarm select/enable operation, a push button for alarm deactivation, and push button for a snooze function for the local suspension or delay of the alarm. As illustrated in FIG. 11, a suitable example for the input means 148 is a plurality of switches 156. The switches comprise an alarm on/off switch 158, a time setting switch 160, a alarm scheduling switch 162, a snooze switch 164, and a light switch 166. The use of a snooze switch 164, by which an activated alarm is rendered temporarily inoperative,

affords the sleeping user additional rest after being initially awakened, and thereby allows a sleeping user opportunity to awaken gradually.

As well, those skilled in the art will recognize various other designs, shapes, sizes and configurations for forming the controller unit 20 and the oral hygiene unit 30, which may perform in substantially the same manner as the embodiments of those elements described and illustrated herein, according to the present invention, it should be understood, therefore, that the overall aesthetic design, and the choice of selection and adjustment means used in this embodiment of the present invention are not intended to be limiting.

From the above description it can be seen that the system of the present invention is able to overcome the shortcomings of prior art systems. While certain novel features of this invention have been shown and described and are pointed out in the annexed claims, it is not intended to be limited to the details above, since it will be understood that various omissions, modifications, substitutions and changes in the forms and details of the embodiments illustrated and in its operation can be made by those skilled in the art without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can, by applying current knowledge, readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention.

What we claim is:

1. A remotely deactivated alarm clock system comprising:

a controller unit, said controller unit for displaying the time, scheduling alarms and generating alarms to awaken a user; and

a oral hygiene unit capable of establishing a wireless communication link with said controller unit, said oral hygiene unit operable by said user for oral hygiene purposes,

wherein said controller unit generates an alarm according to a schedule determined by said user,

wherein operation of said oral hygiene unit establishes a wireless communication link with said controller unit, and generates a usage signal which is wirelessly communicated from said oral hygiene unit to said controller unit, and

wherein said controller unit upon receipt of said usage signal terminates said alarm.

2. A system as claimed in claim 1, wherein said oral hygiene unit is an electric toothbrush unit.

3. A system as claimed in claim 2, wherein said electric toothbrush unit comprises:

a on/off switch;

a wireless communication means coupled to said on/off switch; and

a motion translating means coupled to said on/off switch, said motion translating means enabling the brushing function of said toothbrush;

wherein switching on of said on/off switch activates said motion translating means, and activates said wireless communication means to establish a communication link with said controller unit and to transmit a usage signal to said controller unit, and

wherein said controller unit upon receipt of said usage signal terminates said alarm.

4. A system as claim in claim 3, wherein said wireless communication means is a transmitter.

5. A system as claimed in claim 3, wherein said wireless communication means is a transceiver.

6. A system as claimed in claim 2, wherein said electric toothbrush unit comprises:

a main member comprising a housing, a micro-switch contained within said housing, a transmitter coupled to said micro-switch, and a power induction means contained within said housing; and

a functional member in removable contact with said main member, said functional member operable for brushing teeth, said functional member comprising a on/off switch, a rechargeable power supply unit coupled to said on/off switch, and a motion translating means coupled to said on/off switch,

wherein said rechargeable power supply unit of said functional member is charged by said power induction means of said main member when said functional member is in contact with said micro-switch,

wherein said functional member while in contact with said micro-switch deactivates said transmitter,

wherein separation of said functional member from said micro-switch for usage activates said transmitter,

wherein activation of said transmitter transmits a usage signal to said controller unit, and

wherein said controller unit upon receipt of said usage signal terminates said alarm.

7. A system as claimed in claim 6, wherein said rechargeable power supply unit is a rechargeable battery.

8. A system as claimed in any one of the preceding claims, wherein said controller unit comprises:

a control unit,

a wireless communication means coupled to said control unit, said wireless communication means for communicating with said oral hygiene unit;

a sound generation means coupled to said control unit;

a display means coupled to said control unit; and

an input means coupled to said control unit.

9. A system as claimed in claim 8, wherein said wireless communication means of said controller unit is a receiver.

10. A system as claimed in claim 8, wherein said wireless communication means of said controller unit is a receiver, said receiver means is able to identify said oral hygiene unit by the transmitting frequency.

11. A system as claimed in claim 8, wherein said wireless communication means of said controller unit is a receiver, said receiver means is able to identify said oral hygiene unit by its unit code.

12. A system as claimed in claim 8, wherein said wireless communication means of said controller unit is a transceiver.

13. A system as claimed in claim 8, wherein said controller unit further comprises a snooze means coupled to said control unit.

14. A system as claimed in claim 8, wherein said control unit comprises a microcontroller with input and output interface, and a memory coupled to said microcontroller.

15. A system as claimed in claim 8, wherein said sound generation means comprises one of a speaker and a buzzer.

16. A system as claimed in claim 8, wherein said display means is a liquid crystal display.

17. A system as claimed in claim 8, wherein said display means is a light emitting diode display.

18. A system as claimed in claim 8, wherein said input means includes switches, key means, push-button means, rotatable dials and rotatable wheels.

19. A system as claimed in claim 8, wherein said input means is a plurality of switches, said switches comprising a on/off switch, a time setting switch, a alarm scheduling switch, a snooze switch, and a light switch.

20. A system as claimed in claim 8, wherein the sound generation means generates an alarm where the volume of the alarm softens after the initial wake-up call.