A receiver unit (2) for a radio signal-based mail delivery system comprising a transmitter unit (1) for being mounted on a mailbox or mail slot flap (4) and such receiver unit (2) for being located at a distance from the transmitter unit (1). The receiver unit (2) is provided with a receiver for receiving a radio signal and with means for indicating that such radio signal has been received. Besides, the receiver unit (2) is provided with a clock and is configured for registering the hour when the radio signal was received; and the means for indicating when a radio signal was received comprise a visual and/or audible message about the hour when the radio signal was received also including a mail delivery system comprising such receiver unit.
RECEIVER UNIT FOR A MAIL DELIVERY SYSTEM

[0001] The present invention relates to a receiver unit for a radio signal-based mail delivery unit comprising a transmitter unit for mounting on a mailbox or mail slot flap, and such receiver unit for being located at a distance from the transmitter unit, which receiver unit is provided with a receiver for receiving a radio signal and with means to indicate that such radio signal has been received.

[0002] Such receiver unit is known from U.S. Pat. No. 4,872,210 that teaches a cordless mail delivery system for use in connection with a mailbox of American type. The mail delivery system comprises a transmitter unit that is mounted on the interior side of the mailbox flap and provided with a switch that registers when the flap is opened. As a consequence of that, a radio signal is transmitted to a receiver unit located elsewhere. The receiver unit shown in this disclosure is provided with a sound generator that is activated when the receiver unit receives a signal from the transmitter unit, and besides a light diode is switched on; thereby enabling the user to see that something has been delivered to the mailbox, even if he has not heard the sound. The receiver unit is also provided with a reset button that will, when pressed, cause the receiver unit to revert to its starting position.

[0003] Corresponding receiver units are known from the mail delivery systems taught in U.S. Pat. No. 5,023,595 and U.S. Pat. No. 6,046,675.

[0004] These prior art receiver units are configured for emitting a sound as well as a light signal when they receive a radio signal from a transmitter unit mounted in connection with the flap of the mailbox. Whether the user hears the sound signal will depend on his being in the vicinity when it is emitted. If the user is not around, he is not informed that something has been delivered to his mailbox until he sees the visual marking on the receiver unit, eg in the form of a lamp that is lit. Although this marking tells the user that the flap of the mailbox has been activated, it does not tell anything about the hour of the activation, i.e. the time when something was delivered to the mailbox.

[0005] It has been found, however, that the time when something was delivered to the mailbox is generally a point of much interest to the user. If for instance, the user is walking-impaired, it is crucial to know when—on a daily basis—the car can expect delivery to his mailbox to save him fruitless trips to the receiver unit for checking it. By the prior art mail delivery systems it is possible only to estimate the expected hour of delivery by checking the receiver unit during a period of several days and at short intervals and subsequently make a note of when the check was performed that revealed that something was delivered to the mailbox. Obviously this method is unsuitable for individuals with a walking-impairment.

[0006] There are also users that subscribe to a morning paper and where the subscription gives the customer the right to have the newspaper for free if it arrives later than a given time. If the user is not up and verifies whether the newspaper has arrived on time, he may—when later he gets up—merely ascertain that the newspaper has arrived. However, he cannot know whether he should be entitled to have precisely today’s newspaper for free, and the prior art receiver units give no indication to that effect.

[0007] These needs exist not only in the context of mailboxes that are located outside the house, but also in case of mail slots located eg in a front door or an outer wall.

[0008] It is the object of the present invention to provide a receiver unit for a mail delivery system as featured in the introductory part, said receiver unit drawing the attention of the user to the fact that mail has arrived and to the hour when a signal was received from a transmitter unit.

[0009] This is obtained by the receiver unit described above being provided with a clock; by configuring the receiver unit to register the hour of receipt of the radio signal; and by the means for indicating that a radio signal has been received comprising a visual and/or audible notice of the hour of receipt of the radio signal.

[0010] Hereby it is obtained that, in addition to being informed that the mailbox or the mail slot flap has been activated, information is also given about the time of that activation. Now the user can use this information eg to learn when delivery of mail, trade circulars, newspapers, etc. takes place, but also to use this information in support of a complaint, if any, of a newspaper being delivered too late.

[0011] The receiver unit can be provided with a display that will, in the starting position, show the current hour of the day, it being configured to display, upon receipt of a radio signal, the hour of receipt of the radio signal simultaneously with a symbol to indicate that a radio signal was received. Such symbol could be eg a depiction of an envelope or a text that says that the mail has been delivered.

[0012] Preferably the hour of receipt of the radio signal and the symbol that indicates that a radio signal was received alternates which contributes to capturing the users attention that something has been delivered to the mailbox or through the mail slot.

[0013] According to an alternative embodiment the receiver unit is provided with a display that will, in the starting position, show the current hour of the day, it being configured for displaying, upon receipt of a radio signal and by use of flashing digits, the time of receipt of the radio signal.

[0014] According to a third embodiment the receiver unit is provided with a first display that will, in the starting position, show the current hour of the day, it being configured, upon receipt of a radio signal, to show a textual notice whereas a second display is configured to show the hour of receipt of the radio signal.

[0015] By these various embodiments, different ways are thus provided of visually displaying that the mailbox or mail slot flap has been activated as well as the hour when the activation took place.

[0016] Preferably the receiver unit is provided with a reset button that is configured such that activation thereof causes the functions of the receiver unit to revert to their starting positions. Alternatively or as a supplement the transmitter unit used in combination with the receiver unit could be provided with a reset button that will, via radio signals, see to it that the functions of the receiver unit revert to the starting position.

[0017] According to a preferred embodiment, the receiver unit is provided with a sound generator that is configured for
emitting a sound signal upon receipt of a radio signal, and means are preferably configured for adjusting the volume of the sound generator and a display is arranged that is able to show the volume set. The volume can be adapted individually and the sound can optionally be switched off altogether.

[0018] In a particularly sophisticated version the receiver unit is configured with means that enable programming of special sound effects. Besides, a sophisticated version of the receiver unit can be configured with means that enable that statistical data about hours of receipt of radio signals can be transmitted to an external it, such as a personal computer. These means comprise electronics in the receiver unit that are capable, on the one hand, of recording and storing sound affects and statistical data and, on the other, are capable of communicating with external units. A receiver unit configured with such means provide the user with further options for adapting the receiver unit in accordance with his wishes and also enables extraction and further processing of statistical data concerning the delivery of mail, trade circulars, newspapers, etc.

[0019] According to a particularly preferred embodiment, the integral clock is radio controlled, whereby the hour is always correct, at least in the areas where this service is available.

[0020] In the preferred embodiment the receiver unit is provided with an internal antenna for receiving a radio signal from a transmitter unit. In particular cases where the transmitter/receiver conditions are poor, however, it may be provided with an external antenna for receiving the radio signals.

[0021] This external antenna can be located at a distance from the receiver unit as such, and the two can be connected to each other by means of an antenna cord or cordlessly. This embodiment is of particular interest, if there is a very long distance between the transmitter unit and the receiver unit; or in case the transmitter unit is configured for transmitting with very little output.

[0022] The invention will now be explained in further detail with reference to the drawing, wherein

[0023] FIG. 1 shows an explanatory sketch of a mail delivery system and a first embodiment of a receiver unit according to the Invention;

[0024] FIG. 2 shows a second embodiment of a receiver unit according to the invention

[0025] FIG. 3 shows a third embodiment of a receiver unit according to the invention;

[0026] FIG. 4 is an explanatory sketch of a mail delivery system according to the invention featuring a receiver unit that is provided with an external antenna.

[0027] FIG. 1 shows a radio signal-based mail delivery system according to the invention. The mail delivery system comprises a transmitter unit 1 and a receiver unit 2 that are able to communicate with each other via radio signals in a manner known per se. In the case shown the mail delivery system is used in connection with a mailbox 3 with a relatively narrow mailbox flap 4 that can be flipped outwards or inwards for delivery of mail, newspapers, trade circulars, etc. The mailbox 3 is also provided with a larger wicket 5 that can be opened by means of a key in the lock 6 when the mailbox 3 is emptied. The transmitter unit 1 is mounted on the mailbox flap 4 and is provided with a movement sensor and a transmitter that transmits radio signals when the movement sensor registers a movement of the mailbox flap 4. The transmitter unit 1 can, in connection with the present invention, be configured in a manner known per se, but in the preferred embodiment it is configured as a relatively flat and narrow unit that can be mounted on any known kind of mailbox or mail slot flap.

[0028] A receiver unit 2 that is located at a distance from the transmitter unit 1 captures the emitted radio signals, it being—for instance—shown arranged within a house 7. According to the invention the receiver unit 2 is configured with a clock, whereby the hour of receipt of a radio signal from the transmitter unit 1 can be registered and shown on a display 8.

[0029] The receiver unit 2 is preferably configured such that the display 8 usually shows the current time of the day; but when mail, newspapers, trade circulars, etc, are delivered to the mailbox 3 via the mailbox flap 4, whereby a radio signal is emitted from the transmitter unit 1, the receiver unit 2 registers the hour of receipt of this signal; and this point in time is shown in the display 8 while simultaneously one or more symbols are displayed, such as an envelope 9. This is shown in FIG. 1, from which it will thus appear that the mailbox flap 4 was activated at 9:28 am. Of course, the option may be provided that the receiver unit 2 shows the hour either as a 24-hour clock or as a 12 hour clock (am, pm).

[0030] In order to further capture the attention of the user, the hour of receipt of the radio signal and the envelope 9 will, in the preferred embodiment, be displayed alternately such that the hour and the envelope alternate, e.g., in a flashing frequency of 1-2Hz.

[0031] Thus, in normal conditions the user will be able to see the current time on the display 8 of the receiver unit 2, but if something has been delivered to the mailbox 3 the user will be able to know partly by display of the envelope 9 and partly by being able to see the hour when something was delivered to the mailbox 3. The receiver unit 2 is also provided with a reset-button 10 that is activated after the mailbox 3 has been emptied, whereby the receiver unit 2 is zeroed and again displays the current hour of the day, and the envelope 9 disappears.

[0032] FIG. 2 shows an alternative embodiment of a receiver unit according to the invention. Like the receiver unit 2 shown in FIG. 1, this receiver unit 12 comprises a dock, whereby the hour of receipt of a radio signal from a transmitter unit 1 can be registered and shown. In the receiver unit 12, a display 18 will normally show the current hour of the day with still digits, but when a signal is received from a transmitter unit 1, the display 18 changes from displaying the current hour to showing the hour of receipt of the radio signal with flashing digits. In this manner it is clearly indicated that the display 18 does not show the current hour of the day, but rather the hour of receipt of mail.

[0033] Additionally the receiver unit 12 is provided with a sound generator that can be of a type that is known per se and that will, via openings 13 in the receiver unit 12 emit a sound signal, when it receives a radio signal from a transmitter unit 1. The volume of the sound signal can be adjusted
via a push button 14, and an indication of the volume is displayed by means of one or more lit fields 15.

[0034] Preferably one more field 15 is lit each time the push button 14 is activated, corresponding to an increase in the volume. When the last field 15 is lit, the subsequent push on the push button 14 turn off all the fields 15 again to indicate that the sound is off.

[0035] This receiver unit 12 is also provided with a reset-button 10 for zeroing the display 18 when the mailbox 3 has been emptied.

[0036] FIG. 3 shows a third embodiment of a receiver unit according to the invention. This receiver unit 22 also comprises a display 28 that is configured to display, in the starting position, the current hour of the day. Upon receipt of a radio signal from a transmitter unit 1, however, the display switches from showing the current hour of the day to showing a message that the mailbox flap has been activated. This message could be in the form of eg a symbol or a word such as “POST” or “MAIL.” or any other word in a language of choice. Simultaneously with the display switching from showing the current hour of the day to showing the text message, another display 29 will show the time, when the mailbox flap was activated.

[0037] This receiver unit 22 is also provided with a sound generator, and it is also provided with means that are known per se for receiving and saving external sounds. Such sounds could be transmitted to the receiver unit 22 via an input port 23 for an external unit, such as eg a microphone or a personal computer. The receiver unit 22 can also be provided with a built-in microphone whereby a desired sound can be recorded directly.

[0038] The receiver unit 22 is also provided with an output port 24 for connection of external equipment, such as a personal computer. Preferably the receiver unit 22 is provided with storage means that allow storage of data eg concerning hours when radio signals were received from a transmitter unit 1. These data and/or statistical data may then be transmitted to a personal computer, thereby enabling the user to perform additional statistical analyses on the data. It should be emphasized that the input and output ports 23, 24 are merely shown schematically in FIG. 3. It being possible that they are configured in many other ways and are option-
ally assembled in one plug.

1. A receiver unit (2; 12; 22) for a radio signal-based mail delivery system comprising a transmitter unit (1) for being mounted on a mailbox or mail slot flap (4) and such receiver unit (2; 12; 22) for being located at a distance from the transmitter unit (1), said receiver unit (2; 12; 22) for being located at a distance from the transmitter unit (1), said receiver unit (2; 12; 22) being provided with a receiver for receiving a radio signal and with means for indicating that such radio signal has been received, characterised in that the receiver unit (2; 12; 22) is provided with a clock; that the receiver unit (2; 12; 22) is configured for registering the hour when the radio signal is received; and that the means for indicating when a radio signal was received comprise a visual and/or audible message about the hour when the radio signal was received.

2. A receiver unit according to claim 1, characterised in that it is provided with a display (8) that will, in the starting position, show the current hour of the day, it being config-
ured for displaying, upon receipt of a radio signal, the time when the radio signal was received simultaneously with a symbol (9) that indicates that a radio signal was received.

3. A receiver unit according to claim 2, characterised in that the hour when the radio signal was received and the symbol (9) that indicates that a radio signal was received are shown alternately.

4. A receiver unit according to claim 1, characterised in being provided with a display (18) that displays, in the starting position, the current hour of the day, it being config-
ured for displaying, upon receipt of a radio signal and by means of flashing digits, the hour when the radio signal was received.

5. A receiver unit according to claim 1, characterised in that it is provided with a first display (28) that displays, in the starting position, the current hour of the day, it being config-
ured for displaying, upon receipt of a radio signal, a messaging in the form of text, whereas a second display (29) is configured for displaying the hour when the radio signal was received.

6. A receiver unit according to any one of claims 2-5, characterised in being provided with a reset button configured such that activation thereof causes the display (8; 18; 28; 29) to revert to the starting position.

7. A receiver unit according to any one of claims 1-6, characterised in being provided with a sound generator configured for emitting sound signal upon receipt of a radio signal.

8. A receiver unit according to claim 7, characterised in being configured with means (14) for adjusting the volume of the sound generator; and provided with a display (15) to show the setting of the volume.

9. A receiver unit according to any one of claims 7-8, characterised in being configured with means that enable programming of special sound effects.

10. A receiver unit according to any one of claims 1-9, characterised in being provided with means that enable statistical data about hours when radio signals were received to be transmitted to an external unit, such as a personal computer.

11. A receiver unit according to any one of claims 1-10, characterised in its clock being radio controlled.

12. A receiver unit according to any one of claims 1-11, characterised in being provided with an external antenna (30) for receiving radio signals.

13. A receiver unit according to claim 12, characterised in that the external antenna (30) is provided with the receiver unit via an antenna cord (31).

14. A receiver unit according to claim 12, characterised in that the external antenna (30) is connected cordlessly to the receiver unit.

15. A radio signal-based mail delivery system comprising a transmitter unit (1) for being mounted on a mailbox or mail slot flap (4) and a receiver unit (2; 12; 22) for being located at a distance from the transmitter unit (1), said transmitter unit (1) being provided with a movement sensor for detecting movement of the mailbox or mail slot flap (4), and a transmitter with power supply for emitting a radio signal depending on movement of the mailbox or mail slot flap (4), and said receiver unit (2; 12; 22) being provided with a with means for indication that such radio signal has been received, characterised in that the receiver unit (2; 12; 22) is configured as featured in any one of claims 1-15.

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