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(54) **Multi-function clock**

(57) A multi-function clock comprises a calendar circuit (29) and luminous signalling means (31) designed to emit, when activated, colours from a plurality of colours. The multi-function clock also comprises an electronic memory (30) which contains scheduled calendar dates/times and a system for associating scheduled

dates/times with colours from the plurality of colours. A control circuit (32) is connected to the calendar circuit (29), the electronic memory (30) and the signalling means (31). The signalling means (31), when a stored date/time is reached, emit a specific colour or combination of colours associated therewith.

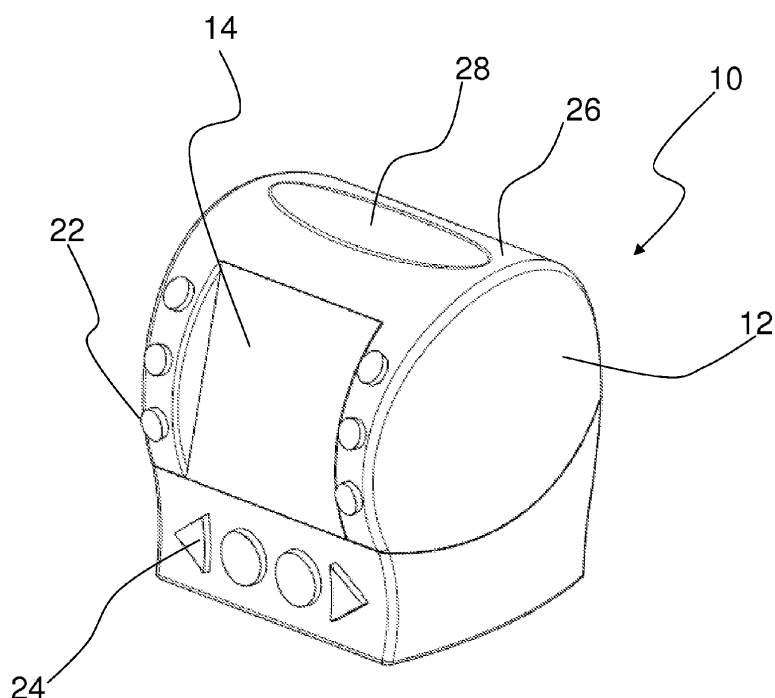


Fig. 1

Description

Description

[0001] The present invention relates to a multi-function clock of the type comprising a luminous signal.

[0002] The growing interest in the environment has increased the awareness of various local authorities who have consequently introduced the selective collection of recyclable materials such as paper, plastic and aluminium for local users.

[0003] Initially said selective waste collection was achieved by introducing new waste disposal bins which differ from each other depending on the type of waste to be stored.

[0004] This type of selective waste collection system in the past has created and today continues to create, where still used, a number of problems relating to both the concentration of these bins in certain urban areas and the lack of discipline of many users. In fact not all the waste is disposed of inside the relevant bin, therefore hindering correct recycling of the recyclable material.

[0005] During the last few years selective waste collection has become increasingly more "door-to-door" in nature, in the sense that the waste is collected from each household, thereby dispensing with the use of the specially allocated bins. The user, the evening before a particular type of waste is due to be collected, deposits the waste in a place which can be easily accessed by the waste collection company, usually in front of the entrance to his/her house. Depending on the type of waste, the latter must be stored inside a particular container.

[0006] This results in at least two advantages:

- it is possible to check that each user is performing correctly selective disposal of the waste; and
- it is possible to achieve a very high percentage of recycled waste material relative to the total amount of waste.

[0007] The waste collection cycle may be, for example, of a monthly, weekly or twice-weekly nature, depending on the type of waste. For example, waste which is defined as "wet" may be collected on a twice-weekly basis, while "paper" waste may be collected even only weekly since it is not perishable.

[0008] Usually waste collection is managed directly by the local authority (for example the town council) who subcontracts this service to third parties. The local authority has a waste collection timetable which may vary from year to year depending on when the working days and holidays fall during the week.

[0009] The waste collection timetable is distributed to the various users at the start of the year so that, for each day of the year, it is known in advance whether and which type of waste will be collected on a particular day.

[0010] This timetable, however, is not without drawbacks: in fact on many occasions forgetful users may not

consult it and forget to place the particular type of waste outside of the house, having to then wait for the next collection date. If, in particular, the waste is of the "wet" type and the environmental temperature is particularly high, there could be unpleasant drawbacks such as a strong smell due to fermentation of the waste.

[0011] The object of the present invention is to overcome the abovementioned known drawbacks by providing a multi-function clock which is able to signal clearly whether and which type of waste will be collected on a given day in the year.

[0012] In order to achieve this object a multi-function clock has been devised, said clock comprising a calendar circuit, luminous signalling means designed to emit, when activated, colours from a plurality of colours, and an electronic memory which contains scheduled calendar dates/times and a system for associating scheduled dates/times with colours from the plurality of colours, a control circuit being connected to the calendar circuit, the electronic memory and the signalling means so as to cause the signalling means, when a stored date/time is reached, to emit the specific colour or combination of colours associated therewith.

[0013] The further objects of the present invention will become clear from the following detailed description, provided by way of a non-limiting example, of a number of embodiments with reference to the accompanying drawings in which:

Fig. 1 shows a perspective view, from the front, of a multi-function clock according to the present invention;

Fig. 2 shows a schematic block diagram of an internal management circuit and a display of a clock according to the present invention.

[0014] The multi-function clock according to the present invention, which is denoted overall by the reference number 10 in Figure 1, comprises an external housing 12 suitable for containing internally the electronic devices present in the known electronic clocks, such as electronic terminal boards (not shown), and a display 14.

[0015] Some parts of said clock 10, which are well known to the person skilled in the art, such as the electrical circuits and power supply circuits, since they are of standard use and design, will be only briefly described. The multi-function clocks of the known type may comprise, in addition to the nowadays customary functions, such as time, date, indication of the internal and external temperature, also luminous signalling functions such as displaying of the time on a surface when a button associated with this function is pressed.

[0016] Said display 14, which is positioned for example so as to form one side of said external housing 12, may comprise, in a manner known per se, a plurality of information, with certain areas of the display 14 being reserved for said information, for example the time 16, date 18 or internal and external temperature 20, in the case

where an external sensor is connected in a known manner to said clock 10.

[0017] The clock 10 according to the invention also comprises power supply means of the known type (not shown). In particular, the power supply means may consist of a battery which is preferably housed inside the external housing 12. According to an alternative embodiment a power supply is provided via a domestic network.

[0018] A mixed power supply moreover, in a known manner, may also be provided: during normal operation the clock 10 is connected to a domestic power supply but, in the event of interruption of the electric power supply, the battery power supply starts to function.

[0019] A further embodiment of the present invention envisages a solar power supply system, using for this purpose special solar panels, for example of the type used in portable calculators.

[0020] Still with reference to Figure 2, the clock 10, in a manner known per se, comprises a known digital calendar circuit 29. This calendar circuit 29 is associated with an electronic scheduler which is also of the digital type.

[0021] The scheduler comprises an electronic memory 30 for introducing time schedules defining the days and the time for collection of the various types of waste associated with the colours which can be produced by the luminous signalling means 31. An electronic control circuit 32, which is contained inside the clock, compares the contents of the memory 30 of the scheduler with the said calendar circuit 29 and, when each scheduled date/time is reached, consequently activates the means 31 for luminous signalling of the suitable colour associated with the scheduled date/time. The electronic control circuit 32 (for example formed with a suitably programmed microcontroller), on the basis of the present description, per se may be easily imagined by the person skilled in the art and therefore will not be further described here in detail. As can be easily imagined by the person skilled in the art, the electronic circuit 32 may advantageously also form part of the same circuit which manages the normal clock functions and which also controls the display 14 and the other functions associated with the multi-function alarm clock.

[0022] The data elements stored in the scheduler are associated with a particular type of waste, for example chosen from: wet waste, dry non-recyclable waste, paper, plastic and "green waste". Clearly the number of data elements in the scheduler (time schedules and colours) is adapted to the number of waste types and the collection frequency.

[0023] The distinction between the various types of waste is based on the colour. In fact, with reference to the previously mentioned case of selective waste collection bins, these bins have, preferably, a given colour depending on the type of waste, i.e. such that they can be distinguished and associated with said waste.

[0024] In other words, the plurality of colours of the signalling means 31 corresponds to a predetermined col-

our code for the types of waste to be disposed of at the various scheduled times.

[0025] The luminous signalling means 31 are able to assume a plurality of colours which corresponds to or comprises the colours of the predetermined code. Said luminous signalling means may be, for example, LEDs or light bulbs.

[0026] In a first embodiment these means may be provided inside the external housing 12 and in this case the external housing 12 will have at least a portion thereof, preferably the top portion 26, which is transparent to the light rays.

[0027] In this way the portion transparent to light rays is suitable for being lit alternately with one of the colours belonging to the plurality of colours.

[0028] The entire clock 10, or part thereof, is therefore illuminated on the inside with the predetermined colour for the scheduled date/time which is reached.

[0029] The external housing may also be fit with two colours at a time alternately or with a combination of colours, depending on the predetermined code. Obviously, several types of waste may be picked up at the same time, such that several colours may be associated with the same scheduled date/time or, similarly, several scheduled dates/times may occur simultaneously.

[0030] The invention is characterized in that each colour of said plurality of colours is associated with a data element of the scheduler.

[0031] Therefore the clock 10 according to the present invention is able to light up in a colour which belongs to said plurality of colours associated with a data element of the scheduler.

[0032] The user of the "door-to-door" waste collection service is alerted, via a light signal of given colour, which waste will be collected and in particular if any waste will be collected. Usually this light signal is activated the evening prior to the collection date.

[0033] According to a first embodiment of the present invention this signal may be periodically set directly by the user so as to be activated, for example, on a daily, twice-weekly, weekly or monthly basis. A suitable user interface is provided for performing the setting operation.

[0034] In the embodiment according to the present invention, shown in Figure 1, the user interface comprises pushbuttons 22 which are arranged on the sides of the display 14 and each of which is associated with a colour of said plurality of colours.

[0035] These pushbuttons 22 may be used both for setting the scheduler and as luminous signalling means 31, inserting directly inside them the suitable light sources.

[0036] Selection keys 24 are positioned below the display 14 and are similar, from a structural and functional point of view, to the selection keys of alarm clocks of the known type. These selection keys 24 are suitable for entering the characteristic data defined above, such as the time, date and other data elements of the scheduler.

[0037] In particular, the selection keys 24 allow the us-

er to select a given day of the scheduler and, via the pushbuttons 22, to associate a colour and therefore a particular data element of the scheduler with this day.

[0038] According to a particular embodiment of the present invention, said selection keys 24 may be used to set, for example, the time at which this light signal will be activated and its duration.

[0039] An interrupt key 28 is positioned on the top part 26 of the clock 10.

[0040] The key 28, if pressed by the user, has the main function of interrupting the luminous signal once the waste has been positioned for collection.

[0041] In the case where the multi-function clock is used also as an alarm clock, the key 28, when pressed, interrupts or delays the alarm in a manner entirely similar to the alarm clocks of the known type, where this function is commonly referred to by the term "snooze".

[0042] In an alternative embodiment of the present invention a known USB port (not shown) is provided and updating of the scheduler is performed via computer.

[0043] In a further embodiment of the present invention the clock 10 already has the scheduler set with the collection dates for one particular year and this scheduler cannot be updated with the collection dates for the following year. In this case the clock may be distributed before the start of the collection year to the users and does not have to be periodically set by the user, its scheduler being valid for a year.

[0044] The advantages of the clock according to the present invention compared to the prior art are therefore obvious; in particular it is possible to have effective and direct signalling as to which type of waste and whether any type of waste will be collected the following day.

[0045] Moreover the clock according to the present invention may be set by the user, allowing him/her to manage the times at which the light signals will occur, depending on the user's requirements.

[0046] With regard to the embodiments described above, the person skilled in the art may, in order to satisfy specific requirements, make modifications to and/or replace elements described with equivalent elements, without thereby departing from the scope of protection of the accompanying claims.

Claims

1. Multi-function clock comprising a calendar circuit (29), luminous signalling means (31) designed to emit, when activated, colours from a plurality of colours, and an electronic memory (30) which contains scheduled calendar dates/times and a system for associating scheduled dates/times with colours from the plurality of colours, a control circuit (32) being connected to the calendar circuit (29), the electronic memory (30) and the signalling means (31) so as to cause the signalling means (31), when a stored date/time is reached, to emit the specific colour or com-

bination of colours associated therewith.

2. Clock according to Claim 1, **characterized in that** the plurality of colours of the signalling means (31) corresponds to a predetermined colour code for types of waste to be disposed of at the various scheduled times.
3. Clock according to the preceding claim, **characterized in that** it comprises an external housing with at least one portion (26) of the external housing which is transparent to the light rays so as to be lit on the inside by said signalling means (31).
4. Clock according to any one of the preceding claims, **characterized in that** it comprises pushbuttons (22), each of which is associated with a colour from said plurality of colours.
5. Clock according to any one of the preceding claims, **characterized in that** it comprises an interrupt key (28) designed to interrupt the luminous signal of the signalling means.
6. Clock according to any one of the preceding claims, **characterized in that** the scheduled times and/or the colours associated with them can be set by the user via a user interface (22, 24).

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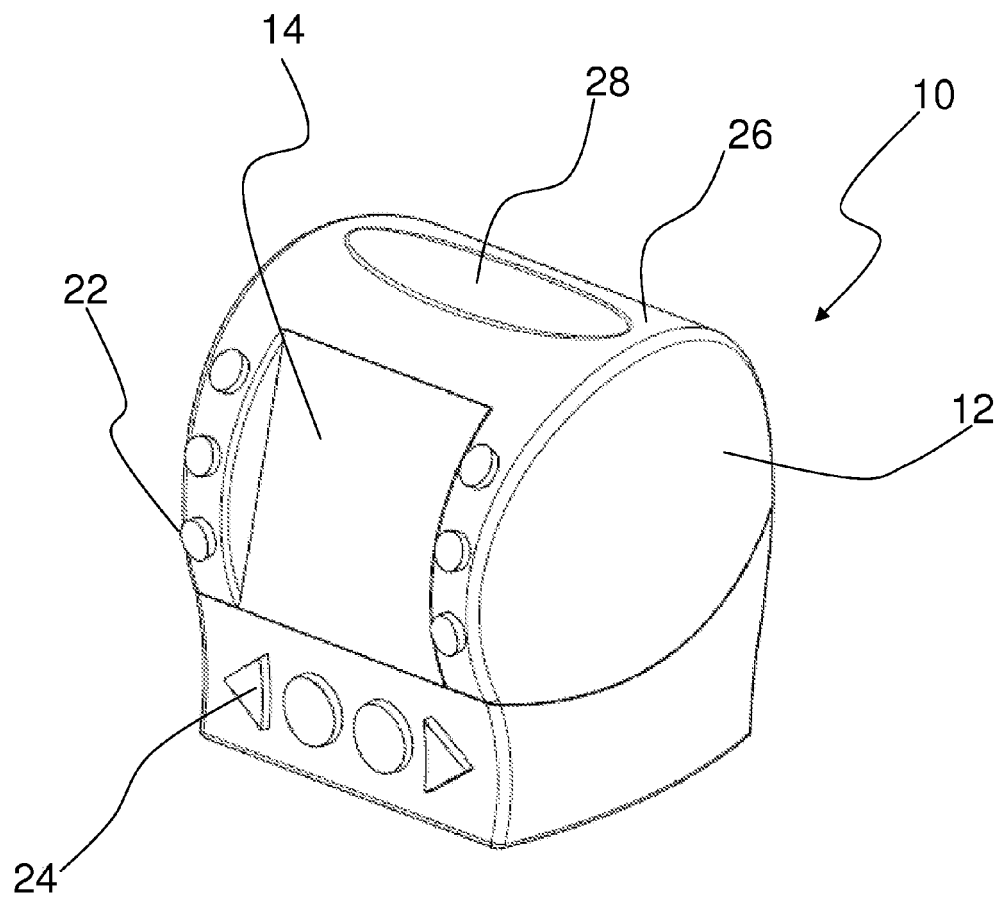


Fig. 1

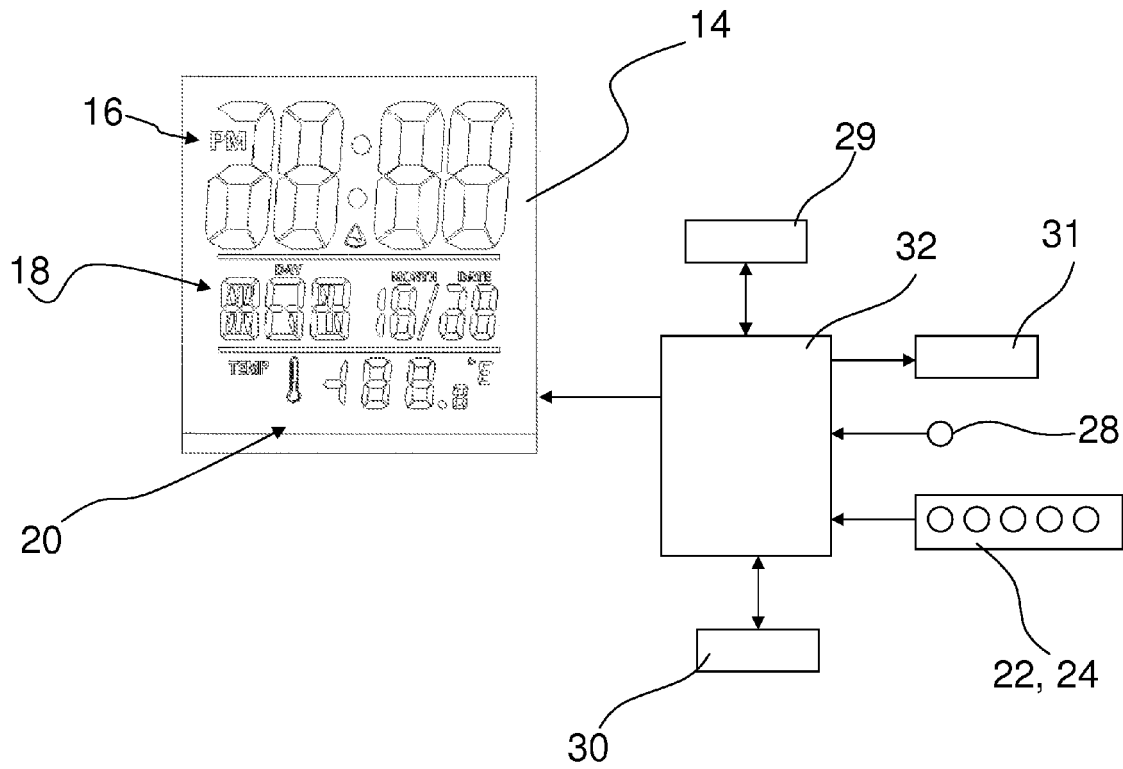


Fig. 2