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(71) Applicant: **Cadama Technology, S.L.
08017 Barcelona (ES)**

(72) Inventor: **ARTOLA GODOY, Manuel
Barcelona (ES)**

(74) Representative: **Sugrane Moliné, Pedro
Provenza, 304
08008 Barcelona (ES)**

(54) **WARNING DEVICE**

(57) Warning device (1) for the taking of medicines which provides warnings during a predetermined period of time and at fixed constant time intervals, which is in-

capable of subsequent alteration. The period of time and the intervals are defined in relation to the medication for which it is programmed. The warning device (1) is preferably provided in the form of a silicone bracelet or anklet.

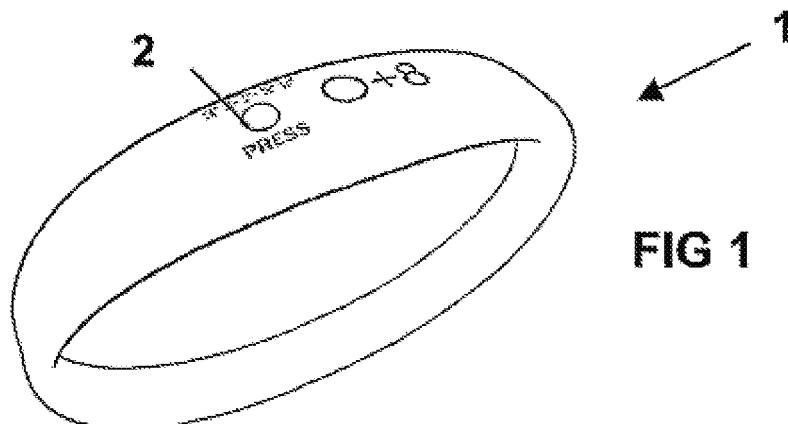


FIG 1

Description**OBJECT OF THE INVENTION**

[0001] The present invention, a warning device, relates to a device the function of which is to provide warnings at predetermined fixed intervals during a preconfigured period of time and the main use of which is as a warning device or reminder for taking medicines.

STATE OF THE ART

[0002] On many occasions, for a medicine to cause the desired effect, it is necessary that the guidelines indicated by the doctor with regard to the duration of the treatment (periodicity, for example for 8 days) and with regard to the specific doses which must be taken every so often (intervals, for example every 8 hours) are carefully followed. In some cases these illnesses are chronic, the taking of medicines being extended in that case over time or in contrast are temporary, the need for medication therefore being occasional.

[0003] Normally when several days have passed, the treatment is occasionally interrupted, either due to carelessness or forgetfulness or due to believing that all the prescribed doses are not necessary. It is also true that on occasions, the correct dose is not taken at the prescribed intervals.

[0004] Therefore the use of a device which facilitates the taking of medication during the indicated period, warning in the specific intervals in which the medication must be taken, is thought to be necessary.

[0005] Several solutions to the problems raised and existing in the state of the art are the use of watches with electronic calendars or alarms. These types of devices require that the user be able to program them in order to be effective, which in many cases is a complicated task since some of the patients to which the medication is directed are elderly personas who are not able to carry out said programming.

[0006] Spanish utility model number ES-1032714U-A1 for example thus describes a warning device for taking medicines in the form of a pendant having means for generating a light or acoustic warning.

[0007] This device carries out the warning by means of a light or acoustic signal even though these warning systems can actually represent a problem since not all people will notice these types of warnings, for example, blind or deaf people. This device also enables the user to switch off the device or disconnect the warnings.

[0008] In addition, international patent application number WO 2005/114597 describes a bracelet device providing information on the health of its carrier as well as an event reminder. In this case, even when the device carries out the warning by means of means which are recognizable by any type of person, it is very complex since it is difficult to program and handle mainly depending on the age of the user as well as on his or her social

condition.

[0009] It is therefore desirable to have a warning device which does not need to be programmed or manipulated by the user, being therefore simple to use and suitable for a person of any age and social condition. It is advisable that said warning is made during the entire period in which it is necessary for the user to give himself or herself medication and at each specific time which the medication must be taken, i.e., during the periodicity and at the prescribed intervals.

DISCLOSURE OF THE INVENTION

[0010] The warning device proposed by the invention solves the previously set forth drawbacks upon presenting a device for warning by vibration during the period and at prescribed intervals for a certain medicine. It does not need to be programmed due to the fact that it is dispensed with the specific configuration upon being supplied in each medicine box duly programmed for that specific medicine or by the doctor himself or healthcare personnel.

[0011] Each device has a time indicator in order to better identify the time intervals in which the warning is carried out. Thus for example, a device warning every eight hours for taking a medicine will have "0+8" screen-printed in the outer part, indicating that the dose must be taken every 8 hours. Additionally the name of the product to which it is associated could be screen-printed therein.

[0012] Another way of indicating the time intervals for which the warning is programmed is using a color code. Thus, by way of example, the blue devices could indicate eight-hour warning intervals, green devices four-hour intervals, etc.

[0013] The main feature of this device is its easy and simple use. Likewise, the outer material of the ring-shaped device is elastic, and preferably impermeable, submersible, odorless, non-toxic and antiallergenic. A material having the previous features is silicone. As has been mentioned, said device is presented as a ring-shaped element, preferably circular and for its use as a bracelet, although it is also usable as an anklet, thus being suitable for different types of wrists or ankles according to the characteristics of the user.

[0014] Another of the main features of the device is that it can be used by anyone, and therefore the warning means uses the sense of touch or feeling by means of a vibration system. Other possible systems, although less recommended, are a visual system (by means of LEDs with intermittences in order to be seen by the eye) or an acoustic system (by means of emitting a beep repeated on several occasions in order to be perceived by the ear), or even the combination of them. However, the vibration system has as an advantage compared to the other two systems in that it can be used in users with auditory or visual deficiencies, its use by a greater number of users therefore being possible. Likewise, the vibration is a "confidential" warning means, since only the user notices the

notification without the people closest to him or her perceiving it. This feature is useful since there may be users who prefer to keep the consumption of certain medicines a secret.

[0014] Based on the foregoing, the proposed invention is based on a device with a circular shape and preferably made of silicone, carrying out warnings by means of a vibration mechanism during a specific period and at pre-established intervals for the medicine in question, without needing to be programmable by any user.

[0015] This device allows the user to not have to worry about having to remember the dose of a medicine to be taken.

[0016] The warning device object of the present invention is formed by the following components:

- Ring shaped, preferably circular, element for its use as a bracelet or anklet.
- Inner metal plate embedded in the silicone supporting the electronics.
- Battery.
- Small sized vibrator (possible LED or speaker).
- Programmable computer chip (clock-alarm).
- Activation system by means of pressure.

[0017] All components, except for the circular element, are introduced inside the metal plate such that they are not visible from the outside. It is in this metal plate where, through a slight pressure, the battery makes contact and activates the chip, at which time the first vibration is generated and based on which the following warnings will be carried out for each of the doses during the preprogrammed time.

[0018] The activation of the vibration mechanism is carried out by means of an internal clock. This internal clock is a time counter with a precision common to that of the majority of clocks on the market, having a pre-set alarm in its internal memory according to the hourly use for which it has been preprogrammed.

[0019] The useful life of the device is preferably the same as or greater than the maximum number of doses included in the medicine package. Thus, for example, if a box of medicines contains 24 tablets which must be supplied to the individual at the rate of one tablet every 8 hours for 8 days, by means of previously programming the incorporated chip, the system will carry out a minimum of 24 vibrations with 8-hour intervals each based on which the system is activated by means of the mentioned pressure. It is not recommended that the useful life of the system exceeds by more than 20% for safety reasons. This limited useful life allows the capacity level of the battery to be extremely low and therefore it is extremely light.

DETAILED DESCRIPTION OF THE DRAWINGS

[0020] To complement the description being made and for the purpose of aiding to better understand the features of the invention according to a preferred practical embodiment thereof, a set of figures is attached as an integral part of said description, in which the following has been shown with an illustrative and non-limiting character:

10 Figure 1 shows a view of the warning device.

15 Figure 2 shows a detail of the elements forming part of the device.

DESCRIPTION OF A PREFERRED EMBODIMENT

[0021] In view of the indicated figures, it can be seen how the warning device (1) proposed by the invention has a ring shape for being used as a bracelet or anklet and the manufacturing material being silicone.

[0022] The warning device (1) is inactive during its transport and storage due to the fact that its battery (5) is not in contact with the circuits. The battery (5) must have a voltage between 1.5V and 4.5V. The amperage is defined by the repetition of the vibrations and the duration thereof.

[0023] It is at the time of activation (4) by the user when the consumption of the battery (5) starts. The activation (4) of the device is carried out by means of a pressure in a bulging area of the bracelet (2). The mechanism generating the activation (4) can be pressed again not causing any effect once it has been pressed for the first time and also not being able to be deactivated again.

30 **[0024]** When the activation pressure occurs, at this time a signal is generated which induces the pulse generator (6) to generate a train of constant pulses with the same time width and amplitude. By way of example it can be considered that 1-second pulses are generated.

[0025] A second internal element of the microchip (3) is a pulse counter (8) receiving the output of the pulse generator (6) and carrying out an arithmetic impulse counting operation. The signal of this counter (8) is transferred to a comparative memory (7), in which the value

40 of the measurement unit has been previously introduced.

[0026] The memory (7) is made up of two different elements. In the first element of the memory (7) the specific number of pulses which it has to recognize is preprogrammed from manufacture. In other words, if the device (1) has to warn every 3 hours and the total amount of pills to be taken is 5, these values are introduced the memory (7):

- Activation and first dose: First pulse,
- Second dose: Pulse number 10,800,
- Third dose: Pulse number 21,600,

- Fourth dose: Pulse number 32,400 fourth dose, and
- Fifth dose: 43,200.

[0027] The second element of the memory (7) is the comparator carrying out the function of detecting the pulses which it has memorized therein. According to the previous example, when it detects the pulses numbers 1, 10,800, 21,600, 32,400, 43,200, it will send an additional pulse with a duration previously determined in the factory and normally between 3 and 8 seconds, to the vibrating element (9).

[0028] The vibrating element (9) receives the pulse generated by the memory (7) and vibrates during that predetermined time. The result is a series of vibrations at a fixed time established in the instructions manual of the medicine.

Claims

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1. A warning device of the type emitting a signal to warn the user of the taking of a medicine by means of emitting a specific number of warnings at constant intervals during a determined period of time, **characterized in that** it has a ring shape and is covered with an outer elastic material. 25
2. The device according to claim 1, **characterized in that** said elastic material is impermeable, submersible, odorless, non-toxic and antiallergenic. 30
3. The device according to claim 1, **characterized in that** said interval and period of time are preprogrammed in relation to the conditions for the taking of a medicine to which it is associated. 35
4. The device according to claim 1, **characterized in that** inside said outer material it comprises a plate integrating a battery (5), a pulse generator (6), a memory (7), a counter (8) and at least one warning system. 40
5. The device according to claim 4, **characterized in that** the activation (4) thereof is caused by means of exerting pressure on a projection in the ring-shaped element (2) causing the activation of the battery (5) generating a first pulse. 45
6. The device according to claim 5, **characterized in that** once activated it can not be manipulated by the user. 50
7. The device according to claim 4, **characterized in that** the warning system consists of at least one vibration mechanism (9). 55
8. The device according to claim 4, **characterized in**

that the warning system consists of at least one light mechanism.

9. The device according to claim 4, **characterized in that** the warning system consists of at least one acoustic mechanism. 5
10. The device according to claim 1, **characterized in that** the outer covering material is silicone. 10
11. The device according to claim 2, **characterized in that** it is not reprogrammable. 15
12. The device according to claim 1, **characterized in that** the ring shape is circular and usable as a bracelet and anklet. 15

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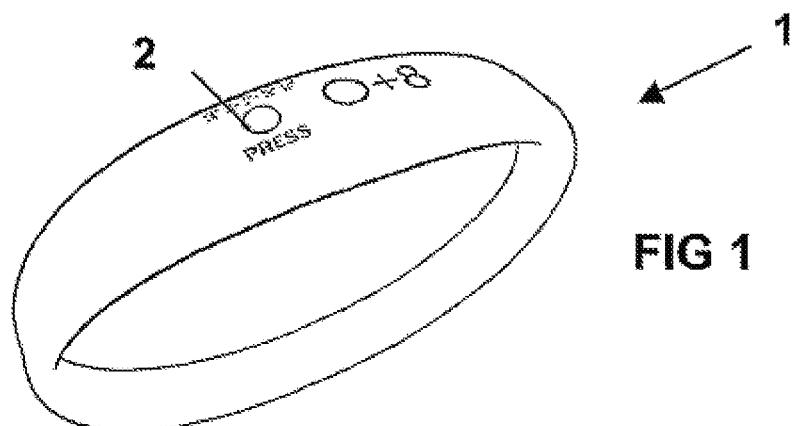


FIG 1

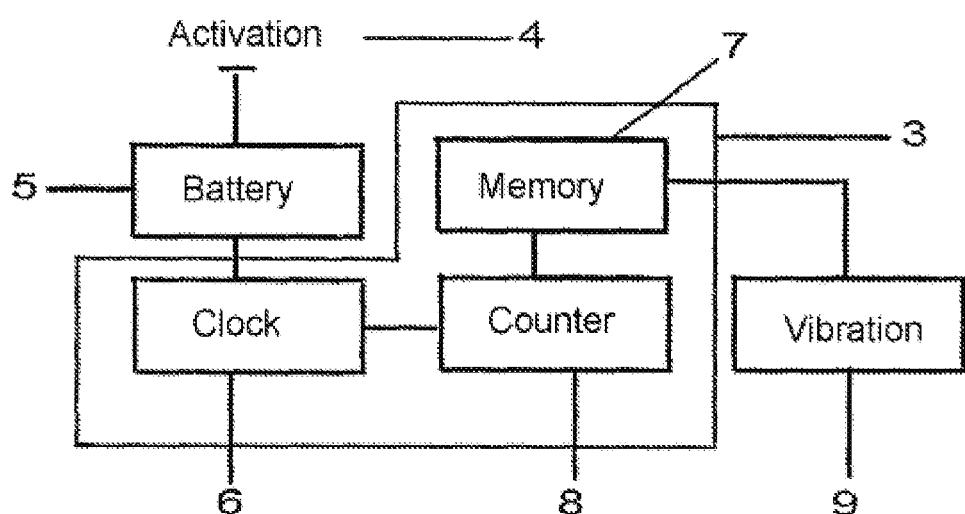


FIG 2

INTERNATIONAL SEARCH REPORT		International application No. PCT/ ES 2007/000022
A. CLASSIFICATION OF SUBJECT MATTER		
<p><i>A61J 7/04 (2006.01)</i></p> <p>According to International Patent Classification (IPC) or to both national classification and IPC</p>		
B. FIELDS SEARCHED		
<p>Minimum documentation searched (classification system followed by classification symbols)</p> <p>A61J 7/04, G04B, G04C</p>		
<p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p>		
<p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)</p> <p>CIBEPAT,EPODOC,WPI, bracelet, medicine, silicon, vibration, vibratory</p>		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2004095148 A2 (VARON, Abraham) 04.11.2004 page 4, line 23-page5, line 8; page 7, line 12-line 16; drawings 5a-5c	1-6,8-9,11-12
Y	US 2005117455 A1 (VALERIO) 02.06.2005 page 2, paragraphs 0022-0025 and paragraph 0030	1-9,11-12
Y	FR 2709417 A1 (ABOULKER et al) 10.03.1995 the whole document	1-9,11-12
A		1
<p><input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.</p>		
<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>		
Date of the actual completion of the international search 25 May 2007		Date of mailing of the international search report 31 May 2007
Name and mailing address of the ISA/ S.P.T.O. C/Panamá 1, 28071 Madrid, España. Nº de fax 34 91 3495304 Facsimile No.		Authorized officer P. Pérez Moreno Telephone No. + 34 91 349 53 94

INTERNATIONAL SEARCH REPORT		International application No.	
Information on patent family members		PCT/ ES 2007/000022	
Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
WO 2004095148 A	04.11.2004	US 2006245303 A	02.11.2006 02.11.2006 02.11.2006
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FR2709417A A	10.03.1995	NONE	-----

REFERENCES CITED IN THE DESCRIPTION

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- WO 2005114597 A [0008]