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(54) **Water saving device**

(57) The present invention disclose a water saving device and its use on taps or hoses or pipes to signal water flow.

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Description

[0001] This invention is related to the field of reducing water consumption.

[0002] Reducing water consumption in the home allows to decrease water and energy bills but also, more importantly, to reduce impact on the environment.

[0003] Reduced water consumption equates to lower water bills and lower environmental impact. The water resources are preserved and less waste water is produced that needs to be treated at sewage plants. In the case of hot water, the energy cost and the production of greenhouse gas are also diminished.

[0004] Several means have been proposed to reduce water consumption.

[0005] One can cite for example modified shower-heads that are specifically designed to use less water, particularly less hot water, thereby reducing the energy necessary to heat the water. In addition, said shower-heads will produce less waste water.

[0006] In another example, the water used when flushing the toilet is reduced by placing a sachet in the toilet cistern. Said sachet is inflated by the water in the cistern, thereby displacing an amount of water of about one litre with each flush.

[0007] In another example, also directed to toilet flushing, a kit is adapted to the top of the toilet siphon and is connected to the flush handle: it only flushes when the handle is held down and stops when the handle is released, thereby allowing the user to control exactly the amount of water needed to clean the toilet.

[0008] In yet another example, a small device is attached to the tap in order to lower the water flow: it only allows a maximum amount of water to flow through the tap per minute thereby reducing and controlling the water and energy consumption.

[0009] It is also known to use shower timers. Typical shower timers are set to switch off after four minutes. It allows saving water and energy as well as reducing the emission of greenhouse gas and waste water.

[0010] Even more simply, sailors know that they should switch the shower off when soaping! There exists a device that can be inserted between the wall and the shower head allowing easy switch off and on of water with just one flick. This invention, contrary to some others does not imply any loss of water pressure.

[0011] It is also known to use "grey" water in toilets or gardening or other activities that do not require drinking water.

[0012] In order to save water it has been emphasised that old toilets use more water than modern toilets and that they therefore should be adjusted to reduce water consumption.

[0013] All these inventions imply a reduction of water flow and/or an automatic external control. There is thus a need for devices that would allow more flexibility and keep the full water pressure when needed.

[0014] It is an aim of the present invention to provide

a device which effectively reduces water consumption.

[0015] It is also an aim of the present invention to provide a device that does not reduce the water pressure.

[0016] It is a further aim of the present invention to provide a device that allows the user to control the water saving.

[0017] Any one of these aims is, at least partially, fulfilled by the present invention.

[0018] Accordingly, the present invention discloses a water saving device, to be taped on a tap, or on a pipe, or on a hose, and that comprises:

1. a sensor capable of detecting water flow in a tap;
2. a timer connected to the sensor and designed to be activated at the onset of water flow;
3. a signal generating device connected to the timer and designed to emit a signal an interval of time T after the onset of water flow.

wherein all three units are in the same casing or in any combination between two or three separate casings.

[0019] In a first embodiment according to the present invention, all three elements, sensor, timer and signal generator are enclosed in the same casing.

[0020] In a second embodiment according to the present invention, the sensor is in a first casing together with a signal transmitter and the timer and signal generator are together in a second casing. The signal transmitter starts the timer.

[0021] In a third embodiment according to the present invention, the sensor is in a first casing with a signal transmitter, the timer is in a second casing with another signal transmitter and the signal generator is in a third casing.

[0022] The sensor capable of detecting the onset of water flow can be selected from any of the known sensors used in voice recognition technology and using high-quality microphones. New digital technology allows more and more functions with smaller and smaller dimensions. Timers have been known for decades and any simple timer known on the market can be used in the present invention.

[0023] The signal generating device is also not limited.

- It can be a sound with constant intensity.
- It can be a sound signal wherein the intensity is adjusted to increase with increasing time, similarly to the 'fasten seat belt' signal in cars.
- It can be a light signal with constant intensity, or a multi-colour light signal or flashing light signal or a combination thereof.
- It can include an automatic switch-off device.
- It can include a remote control device such as for example infrared light (IR) that is typically used for remote control of televisions and hi-fi systems. Because infrared is known to have no health risks and not to interfere with other devices, infrared transmission is broadly used. Typical distances of application are within a range of 1 to 50 m. The maximum dis-

tance depends partly on the technical properties of the IR radiator, such as output power and radiation angle, but also on the local conditions, such as external light sources, objects in or moving into the signal path or the varying orientation of the receiver or radiator.

It can also be a combination of any one or more of these signals.

[0024] The time interval T after which a signal is emitted can be set by the user at will or the device can be purchased with several pre-set options, depending upon its final use.

[0025] After the signal is sent-off, the device can be set either to be silenced or to continue at a constant mode or to continue with an increasingly aggressive mode.

[0026] In standard operating conditions, the signal is silenced when the water flow is ended either manually by turning off the water or by remote control using an infrared device or automatically upon receiving a signal from the timer.

[0027] The present device is enclosed in a small casing, prepared from plastic or metal or any other material that does not interfere with the sensor and signal generator.

[0028] It is placed at the desired location which is either a top or a pipe or a hose and is held into place by fastening means such as for example tape or clamp or magnet. Preferably it must be easily removed in order to be re-used and/or placed at another location.

[0029] Preferably one device is placed on each tap in the house and on garden hoses in order to control the water flow in all parts of the house.

[0030] The present invention also discloses a method for preparing a water saving device that comprises the steps of:

- a) providing a first casing prepared from plastic or metal;
- b) inserting a sensor in the first casing
- c) optionally inserting a signal transmitter in the first casing;
- d) inserting a timer, either pre-set or to be set by operator, either in the first casing or in a second casing;
- e) optionally inserting a signal transmitter in the second casing;
- f) inserting a signal emitting device either in the first casing with the sensor and the timer, or in the second casing with the timer or in a third casing;
- g) adapting fastening means to the casing.

[0031] The present invention further discloses the use of the present water saving device for preserving the environment and for reducing the home water bills.

[0032] The present invention allows effective preservation of water resources and environment without the negative effect of decreasing the water pressure. It also

allows maximum flexibility in determining how much and where water should be saved.

[0033] A microphone such as sold by Sennheiser for actors, in voice recognition technology, was enclosed in a plastic self-adhesive capsule together with a timer set at 2 minutes. The timer triggered a constant sound signal that could only be silenced by an action from the user: either turn off the water or reset the timer.

[0034] The same microphone was used in a similar device wherein the timer was set of a time limit of 45 minutes. The device was placed on a garden hose. When the time limit of 45 minutes was reached, the timer sent a signal that automatically turned off the water.

Claims

1. A water saving device, to be taped on a tap or on a pipe or on a hose, and that comprises:

- a) a sensor capable of detecting water flow in a tap;
- b) a timer connected to the sensor and designed to be activated at the onset of water flow;
- c) a signal generating device connected to the timer and designed to emit a signal an interval of time T after the onset of water flow,

wherein all three units are in the same casing or in any combination between two or three separate casings.

2. The water saving device of claim 1 wherein the sensor is a high quality microphone.

3. The water saving device of claim 1 or claim 2 wherein the timer has a pre-set time limit.

4. The water saving device of claim 1 or claim 2 wherein the timer can be set and modified by the user.

5. The water saving device of any one of the preceding claims, wherein the signal is a sound either continuous or increasing with increasing time.

6. The water saving device according to any one of the claims 1 to 4 wherein the signal is a light, either continuous or multi-colour or flashing.

7. The water saving device according to any one of claims 1 to 4 wherein the signal generates an automatic water cut-off.

8. A method for preparing the water saving device of any one of claims 1 to 7 that comprises the steps of:

- providing a first casing prepared from plastic or metal;

- a) inserting a sensor in the first casing;
 - b) optionally inserting a signal transmitter in the first casing;
 - c) inserting a timer, either pre-set or to be set by operator, either in the first casing or in a second casing; 5
 - d) optionally inserting a signal transmitter in the second casing;
 - e) inserting a signal emitting device either in the first casing with the sensor and the timer, or in the second casing with the timer or in a third casing; 10
 - f) adapting fastening means to the casing.
9. Use of the water saving device of any one of claims 1 to 7 on a tap or hose or pipe. 15
10. Use of the water saving device according to claim 9 in a manual mode. 20
11. Use of the water saving device according to claim 9 in an automatic mode.
12. Use of the water saving device according to claim 9 in a remote control mode. 25
13. Use according to any one of claims 9 to 12 to preserve the environment.

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EUROPEAN SEARCH REPORT

Application Number
EP 08 01 0806

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 14 October 2008	Examiner Urbahn, Stephanie
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)



EUROPEAN SEARCH REPORT

Application Number
EP 08 01 0806

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The Hague		14 October 2008	Urbahn, Stephanie
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 08 01 0806

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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