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(54) Fountain

(57) A garden device comprising a fountain object to be placed in a garden as well as a liquid system for supplying a liquid to the fountain object, which liquid system includes a liquid pump and a liquid supply line for pumping liquid to the fountain object through said liquid supply line, and which liquid system further includes a solar pan-

el for generating electric energy for driving the liquid pump, characterised in that the liquid system further includes a sensor designed to measure the amount of sunlight as well as a controller designed for connecting the liquid pump to the electricity grid for driving the liquid pump in dependence on the amount of sunlight measured by the sensor.

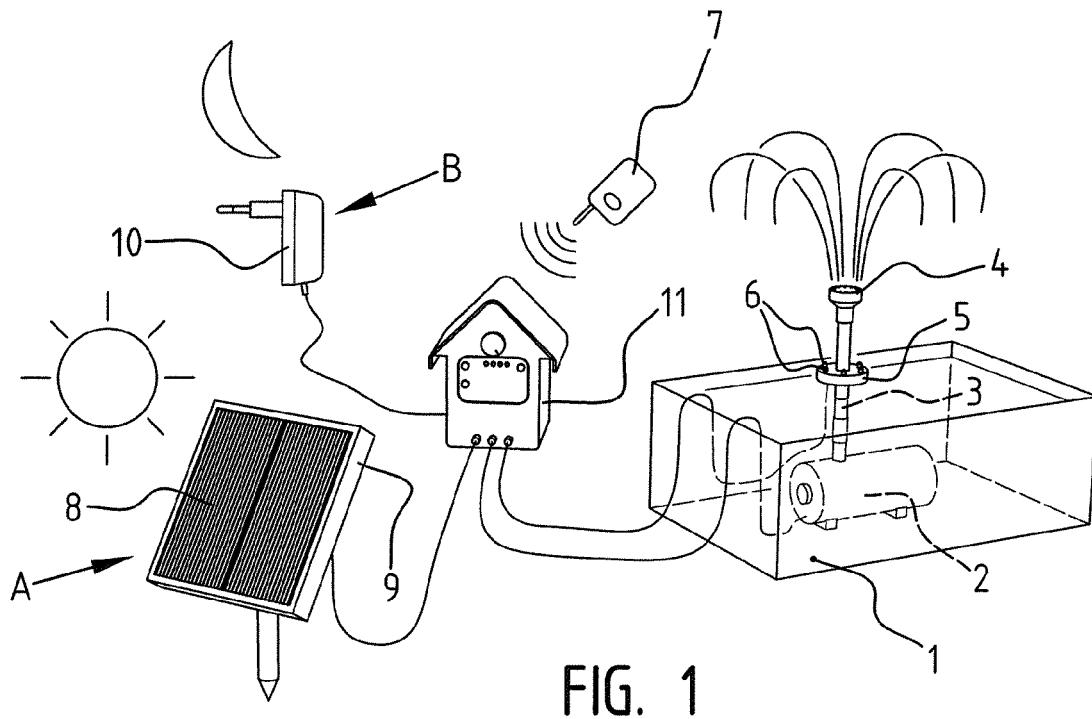


FIG. 1

Description

[0001] The present invention relates to a garden device comprising a fountain object to be placed in a garden as well as a liquid system for supplying a liquid to the fountain object, which liquid system includes a liquid pump and a liquid supply line for pumping liquid to the fountain object through said liquid supply line, and which liquid system further includes a solar panel for generating electric energy for driving the liquid pump.

[0002] Such a garden device is generally known. In particular garden centres are experiencing an increasing public interest in all kinds of garden ornaments and related articles. Said public interest in particular results from an increasing need that people feel to embellish the surroundings of their houses, in particular the garden, with ornaments, such as artistic stone objects. Especially the last few years there has been a increasing interest in garden fountains, for example provided with decorative stones as fountain objects, from which water spouts up in a decorative manner with some force.

[0003] A drawback of the known garden device is that the electric energy generated by the solar panel is stored in batteries of the garden device, so that the batteries will run out after some time in the absence of (sufficient) sunlight. Consequently, the pump can function only for a limited period of time (for example only six hours).

[0004] The object of the invention is to provide an improved garden device which also meets the public's increasing need to arrange their gardens in a decorative way by means of fountain objects.

[0005] In order to accomplish that object, a garden device of the kind described in the introduction is according to the invention characterised in that the liquid system further includes a sensor designed to measure the amount of sunlight as well as a controller designed for connecting the liquid pump to the electricity grid for driving the liquid pump in dependence on the amount of sunlight measured by the sensor. In other words, in situations in which the solar panel does not generate sufficient electric energy for driving the liquid pump, i.e. when there is insufficient sunlight, the controller will connect the liquid pump to the electricity grid. Since no use is made of batteries, the charging of said batteries need not be taken into consideration, so that the fountain object can function at any desired moment and for any desired period of time. The sensor and the controller are preferably integrated into one element.

[0006] In a preferred embodiment of a garden device according to the invention, the liquid pump is only driven by electric energy from the electricity grid in those cases where the amount of sunlight measured by the sensor alone would not suffice for supplying the electric energy required for driving the liquid pump. In case the amount of sunlight measured by the sensor in itself would not suffice for driving the liquid pump (i.e. the liquid pump requires more electric energy than the solar panel is currently capable of generating, for example when it is com-

pletely dark or cloudy or dusky), the controller sees to it that the liquid pump is automatically connected to the electricity grid without delay and that it is driven purely by electric energy from said electricity grid. Thus, there will be no objectionable interruption in the operation of the fountain object, not even when the solar panel is temporarily unable to generate sufficient energy required for the operation of the fountain (for example when the sun disappears behind clouds).

[0007] In another preferred embodiment of a garden device according to the invention, the liquid pump is driven by electric energy from the electricity grid and by electric energy generated by the solar panel in situations in which the amount of sunlight measured by the sensor alone would not suffice for supplying the electric energy required for driving the liquid pump. In other words, the solar panel generates usable electric energy, to be sure, but not enough to drive the liquid pump on its own. In that case the electric energy generated by the solar panel is nevertheless used for helping to drive the liquid pump (i.e. supplementary to the electric energy from the electricity grid). The fountain object can therefore function at any desired moment and for any desired period of time without objectionable interruptions, whilst use is made at all times of the electric energy supplied by the solar panel.

[0008] In another preferred embodiment of a garden device according to the invention, the fountain object comprises a lighting system, which lighting system is fed with electric energy from the electricity grid and/or with electricity generated by the solar panel. Such a lighting system in particular comprises several LED's.

[0009] Preferably, the pressure of the liquid being pumped to the fountain object by the liquid pump is adjustable. It is preferable in that regard if the liquid supply to the fountain object can be controlled in a continuously variable manner, thus providing a virtually infinite number of variation possibilities in having the liquid (water) spout from the fountain object in a decorative manner. In another preferred variant, the liquid supply to the fountain object can be either shut off or opened, so that the liquid pump in fact has two operative positions, viz. a (fully) closed position, in which no liquid is supplied, and a (fully) open position, in which liquid (water) is allowed to pass. The advantage of this is that a simple, reliable and low-maintenance construction is obtained, wherein the fountain object can adorn the garden in an attractive manner. The liquid pump can preferably be operated by remote control.

[0010] In another preferred embodiment of a garden device according to the invention, the liquid system can be connected to the water system of a house.

[0011] In another preferred embodiment of a garden device according to the invention, the liquid system is a closed liquid system. The liquid pump is in that case disposed in the liquid reservoir and the fountain object is disposed above the liquid reservoir.

[0012] The fountain object may be rectangular or circular in shape. In particular a cube-shaped, beam-

shaped or spherical fountain object, possibly mounted on a standard, is very decorative.

[0013] The invention will now be explained in more detail with reference to a figure illustrated in a drawing, which schematically shows the operation of a preferred variant of a garden device according to the invention.

[0014] The figure schematically shows a water reservoir 1 in the form of a tun, in which an electrically driven water pump 2 is present. A fountain object 4 is placed on a standard 3 in the water reservoir 1, from which fountain object water from the water reservoir 1 being pumped up by the water pump 2 spouts in a visually attractive manner. A ring 5 is furthermore provided on the standard 3, on which ring LED's 6 are mounted, which give the whole a magical look. It will be understood that a closed water circuit is used here. The water pump 2 makes it possible to have water spout up from the fountain object 4 with different forces, if desired. To that end, use is made of a remote control unit 7.

[0015] To drive the water pump 2, a solar panel 9 comprising solar cells 8 is provided, which is capable of converting sunlight into electric energy, as well as an alternating current/direct current converter 10, a so-called AD/DC adapter", which is connected to the electric system of, for example, a house. A so-called "controller" 11 provided with a sensor and a controller determines the manner in which the water pump 2 is driven, and that as follows.

[0016] In all cases the amount of sunlight is measured by a sensor. In sunny weather conditions, indicated as situation "A", the solar panel 9 will generate electric energy in an amount that will suffice for driving the water pump 2 with said energy alone. The controller will in that case determine that the supply of energy will be effected only by the solar panel 9 and that consequently no electricity will be drawn from the electricity grid.

[0017] In cloudy weather conditions or in the evening, indicated as situation "A/B", the amount of electric energy supplied by the solar panel 9 will no longer suffice for driving the water pump with said energy alone. In that case the controller will determine that the supply of energy will be effected both by the solar panel 9 and by the electricity grid. In cloudy weather conditions, 70% of the energy required for driving the water pump 2 can be supplied by the solar panel 9, for example, whilst the electricity grid will contribute 30% of the required energy. In the evening said percentages may be 50%/50%, i.e. the solar panel 9 and the electricity grid contribute equally to the energy requirement of the water pump 2. At night, indicated as situation "B", the solar panel 9 will not generate any electric energy in the absence of sunlight, so that the electricity grid will be 100% responsible for driving the water pump 2.

[0018] It is also possible, of course, for the electric energy for the LED's to be supplied by the solar panel 9 and/or the electricity grid.

[0019] The invention is not limited to the embodiment as shown, but it also extends to other variants that fall

within the scope of the appended claims.

Claims

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1. A garden device comprising a fountain object (4) to be placed in a garden as well as a liquid system for supplying a liquid to the fountain object (4), which liquid system includes a liquid pump (2) and a liquid supply line for pumping liquid to the fountain object (4) through said liquid supply line, and which liquid system further includes a solar panel (9) for generating electric energy for driving the liquid pump (2), **characterised in that** the liquid system further includes a sensor designed to measure the amount of sunlight as well as a controller (11) designed for connecting the liquid pump (2) to the electricity grid for driving the liquid pump (2) in dependence on the amount of sunlight measured by the sensor.
2. A garden device according to claim 1, wherein the liquid pump (2) is only driven by electric energy from the electricity grid in those cases where the amount of sunlight measured by the sensor alone would not suffice for supplying the electric energy required for driving the liquid pump (2).
3. A garden device according to claim 1, wherein the liquid pump (2) is driven by electric energy from the electricity grid and by electric energy generated by the solar panel (9) in situations in which the amount of sunlight measured by the sensor alone would not suffice for supplying the electric energy required for driving the liquid pump (2).
4. A garden device according to claim 1, 2 or 3, wherein the sensor and the controller (11) are integrated into one element.
5. A garden device according to any one of the preceding claims 1-4, wherein the fountain object (4) comprises a lighting system (6), which lighting system (6) is fed with electric energy from the electricity grid and/or with electricity generated by the solar panel (9).
6. A garden device according to any one of the preceding claims 1-5, wherein the pressure of the liquid being pumped to the fountain object (4) by the liquid pump (2) is adjustable.
7. A garden device according to any one of the preceding claims 1-6, wherein the liquid system can be connected to the water system of a house.
8. A garden device according to any one of the preceding claims 1-6, wherein the liquid system is a closed liquid system.

9. A garden device according to claim 8, wherein the liquid system comprises a liquid reservoir (1).
10. A garden device according to claim 9, wherein the liquid pump (2) is disposed in the liquid reservoir (1) and the fountain object (4) is disposed above the liquid reservoir (1). 5

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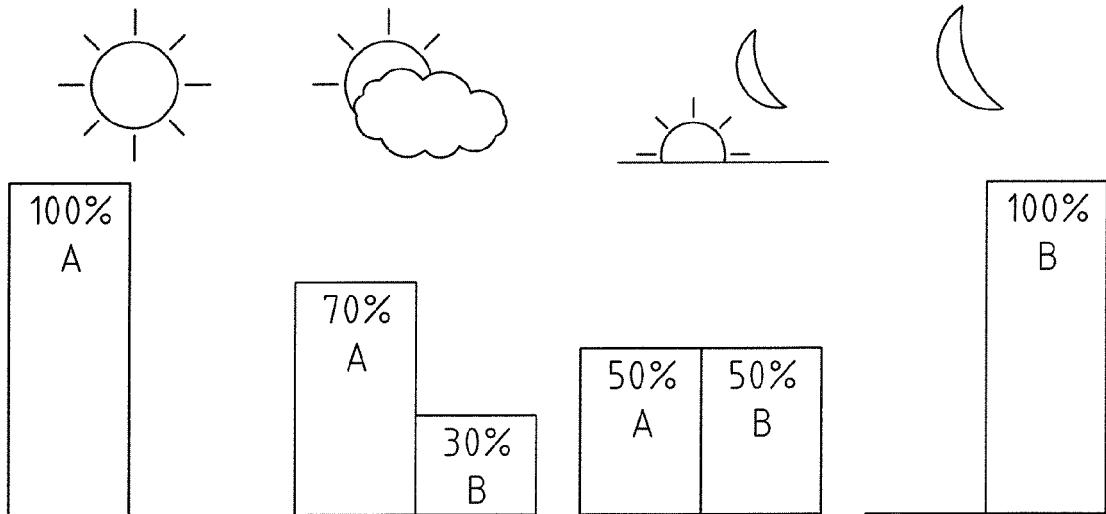
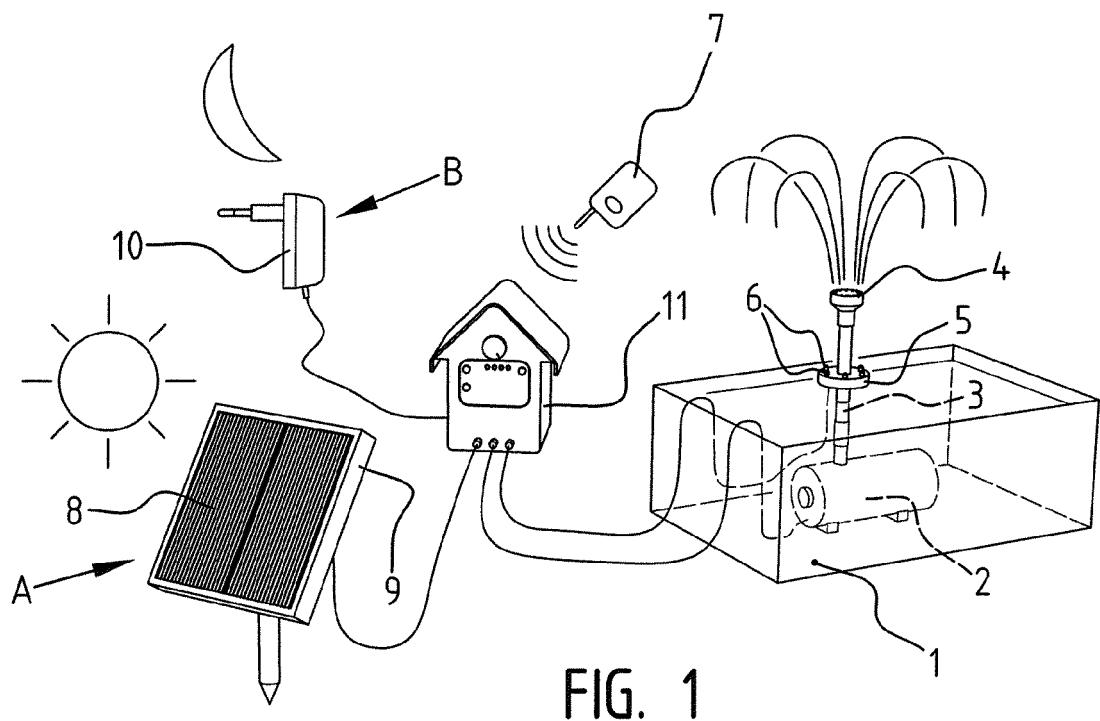


FIG. 2



EUROPEAN SEARCH REPORT

Application Number
EP 10 17 3072

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (IPC)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	US 5 040 726 A (DIMITRI AMIR T [US]) 20 August 1991 (1991-08-20) * column 1, line 63 - column 3, line 33; figures *	1-10	INV. B05B17/08
A	----- US 2005/127199 A1 (RICHMOND SIMON N [AU]) 16 June 2005 (2005-06-16) * paragraph [0027] - paragraph [0039]; figures *	1-10	
A	----- US 2010/090020 A1 (THOMPSON LISA [US]) 15 April 2010 (2010-04-15) * the whole document *	1-10	
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			B05B
The present search report has been drawn up for all claims			
1	Place of search Munich	Date of completion of the search 2 March 2011	Examiner Krysta, Dieter
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			

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

EP 10 17 3072

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. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

02-03-2011

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