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HOURGLASS

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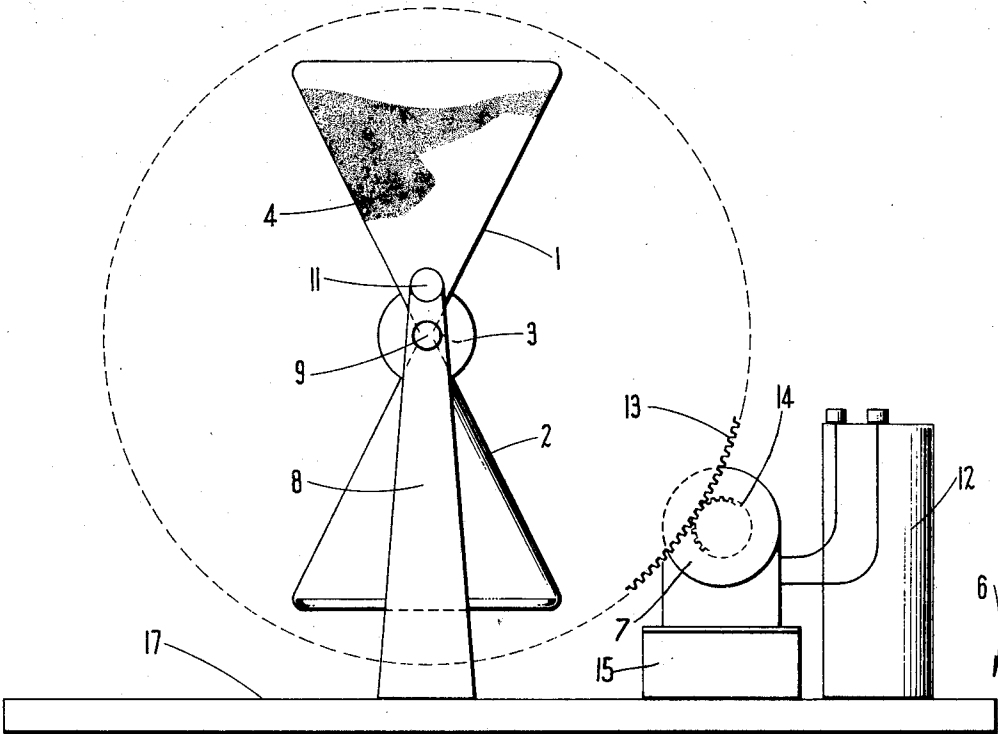


FIG. 1

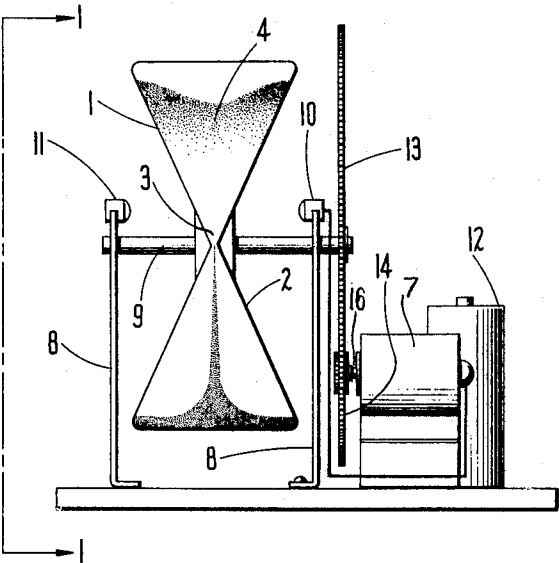


FIG. 2

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HOURGLASS

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3 Claims

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ABSTRACT OF THE DISCLOSURE

An hourglass in which the chambers automatically pivot 180° when the granular material in one chamber has reached a selected level. The hourglass is secured to a gear with the axis of the gear and neck of the hourglass coaligned. A motor operatively connected to the gear is controlled by a circuit having a photoelectric cell which is aligned with a light source through the hourglass at a level such as to activate the photocell for control of the motor when the granular material reaches a selected level.

SUBJECT MATTER OF THE INVENTION

The present invention relates to an hourglass construction which is automatically pivoted at regular intervals when the granular material in one of the hourglass chambers reaches a selected level.

BACKGROUND OF THE INVENTION

Hourglass devices are of course one of the earliest known forms of timepieces and because of their obvious inaccuracies and because they do not continuously run and reset they are no longer seriously used for time-keeping. However, they are still made and sold as novelty items for ornamentation and to some limited extent for simple timekeeping purposes, including for example, for fixed time period measurements in cooking and the like.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide an improved hourglass device which is capable of continuous operation over prolonged periods in which the hourglass is automatically inverted for resetting when the granular material in the upper chamber has run into the lower chamber.

A further object of the invention is to provide an automatic means for inverting the chambers which means is simple in construction and may function as an interesting conversation piece. A further object of the present invention is to provide a design for an automatic hourglass construction which may comprise a novelty item.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of an hourglass construction embodying the invention looking along line 1—1 of FIG. 1; and

FIG. 2 is an end view of the embodiment of FIG. 1.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings there is shown a conventional hourglass having a pair of hollow transparent glass or plastic chambers 1 and 2 connected by an integral neck 3 through which granular material 4 may flow from one chamber to the other. The chambers are preferably symmetrical in arrangement and similar in size. The quantity of granular material 4 and diameter of neck 3 are selected to permit flow of the granular material from one chamber to the other in a fixed period of time, as for example, in an hour.

The hourglass is supported on a frame 6 which has a base 17 and a pair of opposed vertically extending standards or legs 8. The legs 8 are parallelly spaced on opposite sides of the hourglass. A shaft 9 extends between

the upper ends of the legs and is suitably journaled for rotation in the legs. The shaft 9 is secured to the neck of the hourglass so that the hourglass is balanced symmetrically on the shaft. The shaft 9 may be made of a variety of materials but preferably it may be integrally formed with the hourglass container of a transparent plastic.

Secured to the upper end of one leg 8 is a photoelectric cell 10 which is positioned and focused if necessary to detect light from a light source 11 that is supported on the other leg 8. Suitable shields may be used if necessary on the photocell 10 to preclude stray light from other sources from activating the photocell. The light from the light source 11 will pass through the upper chamber of the photocell preferably just above the neck 3 when the granular material 4 has run down in the upper chamber to a level below the aligned light source 11 and photocell 10. Preferably the position of the aligned light source and photocell and the amount of granular material should be selected so as to cause actuation of the photocell precisely one hour after the upper chamber has been inverted to its upper position with a full load of granular material. Obviously, however, other time periods may be used. The light source 11 may be suitably connected to a power source, as for example a battery 12 which may be secured to the base 6.

A gear 13 is coaxially secured to the shaft 9 preferably at one end. This gear 13 may for ornamental purposes have a diameter greater than the height of the hourglass. The gear is keyed to rotate the shaft 9 and thus cause the hourglass which is attached to the shaft to rotate also. A second gear 14 meshes with gear 13 to form a gear train. Gear 14 is suitably supported on and keyed to the shaft 16 of motor 7. Motor 7 is in turn secured to the base 6 by a bracket 15. The motor 7 may be operated by any suitable power source, including, for example a battery 12. The motor power is controlled by a circuit that includes the power source and the photocell in which the photocell when activated closes the circuit for operation. Thus when light source 11 which may be constantly on excites the photocell after the level of granular material is below the light source, the motor 7 is turned on. The gear train rotates gear 13 until the chambers of the hourglass carried by the gear 13 are reversed 180°. At this point the granular material now blocks the light from light source 11 from exciting the photocell thereby opening the circuit to the motor and turning off the motor. The cycle is again repeated when the granular material in the now upper chamber reaches a level below the level of the light source.

I claim:

1. An hourglass construction comprising an hourglass having two chambers interconnected by a constricted neck and containing a quantity of granular material adapted to flow by gravity from one chamber to the other, means supporting said hourglass with pivoting rotation about an axis passing through said neck, means for pivoting said hourglass about said axis to positions with said chambers vertically aligned, means responsive to the movement of a selected volume of granular material from said one chamber to said other chamber for actuation of said means for pivoting for a limited time period in which said chambers pivots 180° about said axis comprising a photoelectric cell, an aligned light source, a circuit connected to said photoelectric cell and light source, and means supporting said photoelectric cell and light source on opposite sides of the position occupied by said one chamber wherein light from said light source will excite said photoelectric cell when said granular material in said one chamber has flowed through said neck under the force of gravity until the upper surface of said granular material in said one chamber is below the level

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of said aligned photoelectric cell and light source whereby said means for pivoting is actuated for a time period until said other chamber reaches the position of said one chamber.

2. An hourglass construction as set forth in claim 1 wherein said means for pivoting comprises a gear, means securing said gear to said hourglass with the axis of said gear and said first mentioned axis coincident,

a motor having a shaft with means operatively inter-engaging said shaft and gear, and said circuit connected to said motor for turning said motor on or off depending upon the level of said granular material in said one chamber.

3. An hourglass construction as set forth in claim 2

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including a frame supporting said hourglass and gear for rotation with said axis coincident, and with said shaft connected to said gear by a second gear.

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